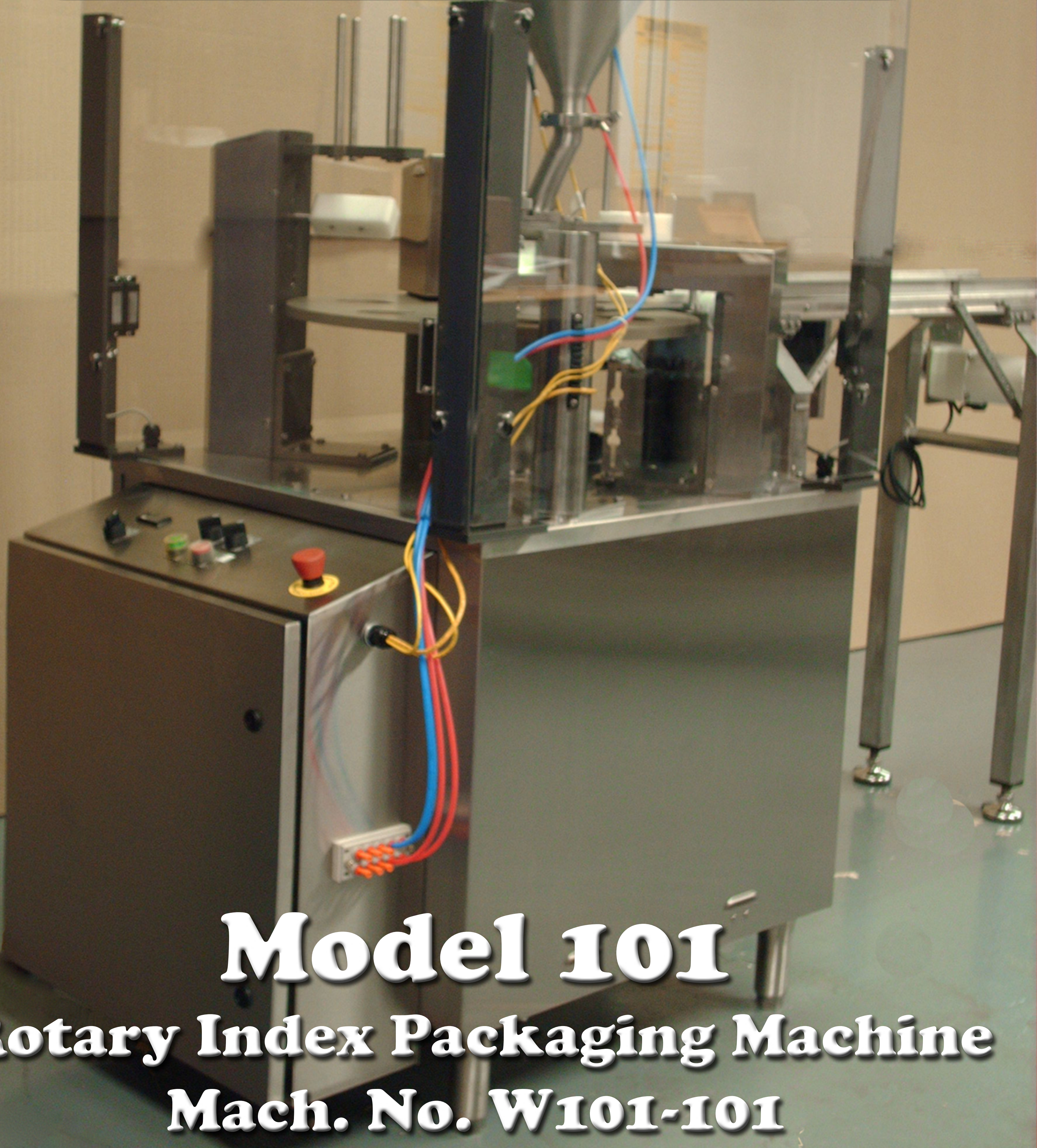
WINPAK



Model 101

Rotary Index Packaging Machine

Mach. No. W101-101

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Bill of Material - Manufactured

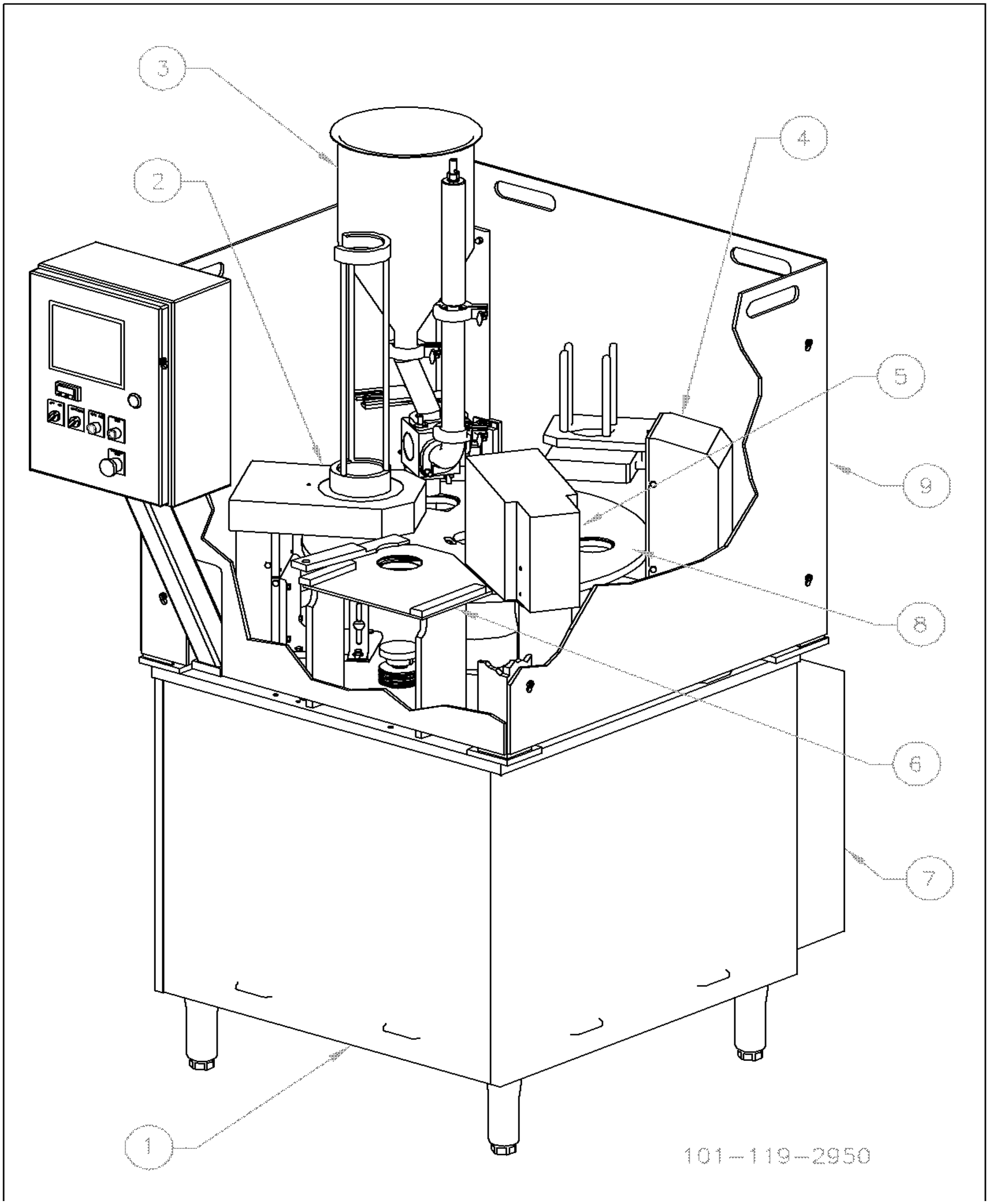
Assembly Part No.: **101-119-2950**

Unit Description: **Machine - Complete**

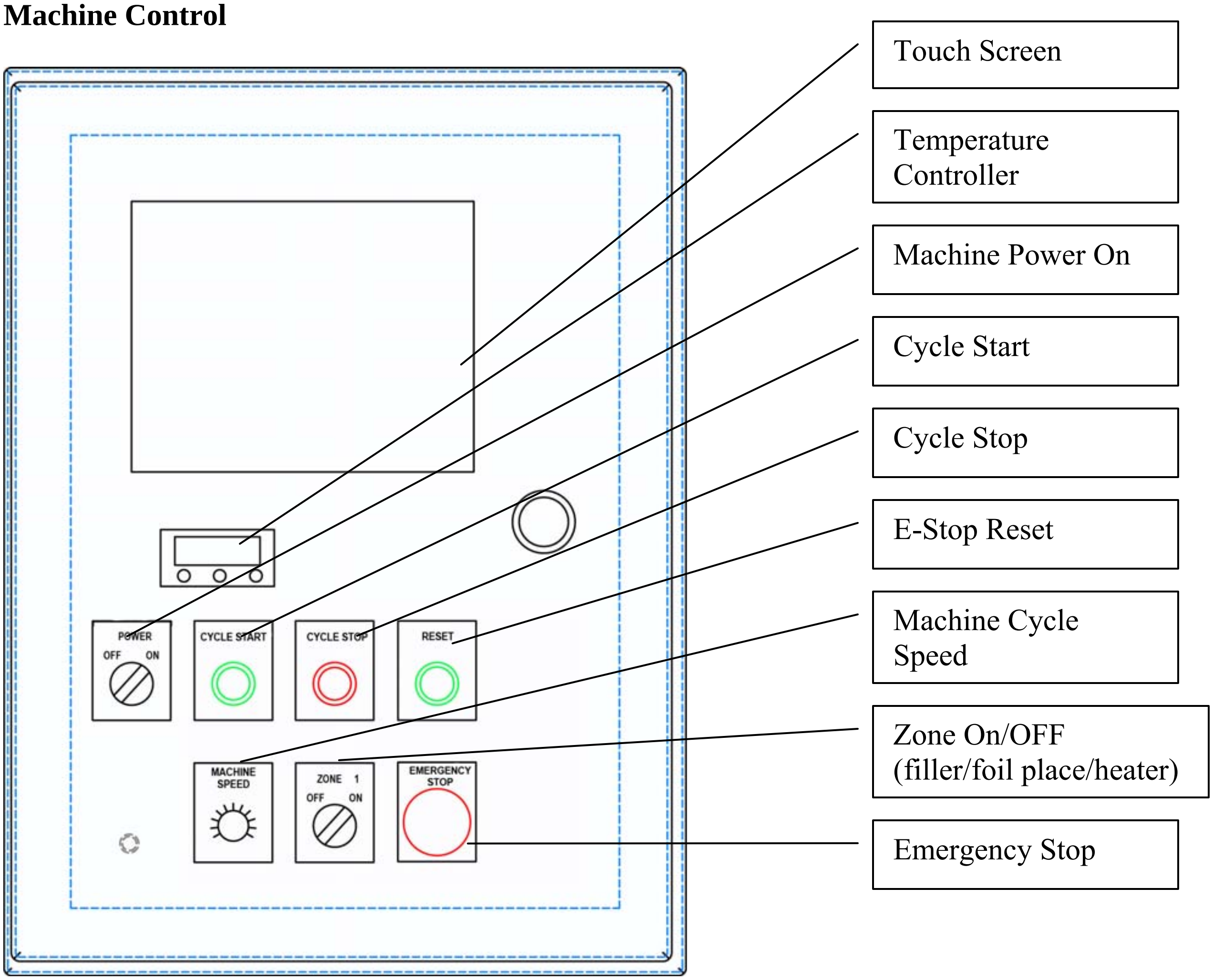
Model: **Single Lane - Small, Liquid Fill**

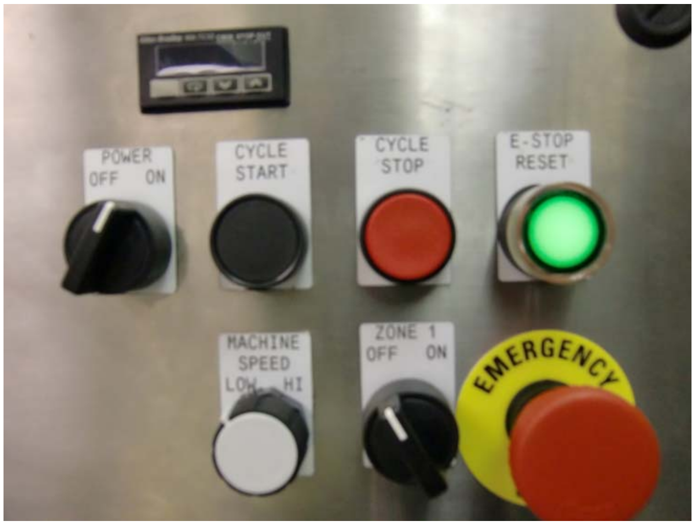
Release Date: **8/4/2009 0:00**

ITEM	QTY.	PART NO.	DESCRIPTION	
1	1	000-000-0002	Machine Base	B.O.M.
2	1	101-001-0006	Station 01Cup Load	B.O.M.
3	1	101-002-0006	Station 02 Fill	B.O.M.
4	1	101-004-0001	Station 04 Foil Place	B.O.M.
5	1	101-005-0004	Station 05 Seal	B.O.M.
6	1	101-006-0001-A	Station 06 Unload	B.O.M.
7	1	101-008-0005	Electric/Pnuematic Package	B.O.M.
8	1	101-009-2950	Tooling Pack	B.O.M.
9	1	000-010-0006-A	Perimeter Guard	B.O.M.


101-119-2950

Machine Control

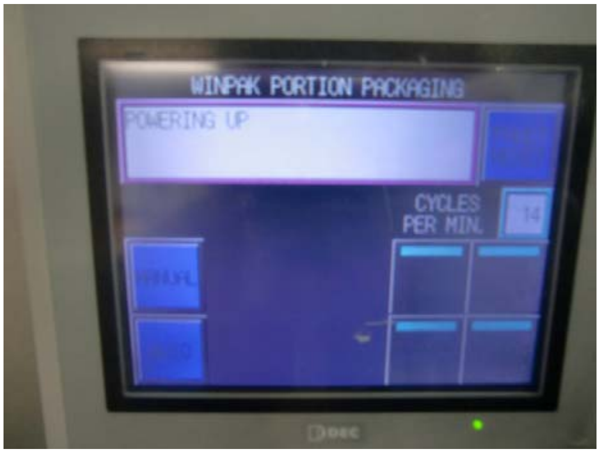

Touch Screen
Temperature Controller
Machine Power On
Cycle Start
Cycle Stop
E-Stop Reset
Machine Cycle Speed
Zone On/OFF (filler/foil place/heater)
Emergency Stop
POWER
OFF ON
CYCLE START
CYCLE STOP
RESET
MACHINE SPEED
ZONE 1
OFF ON
EMERGENCY STOP


POWER
OFF ON
CYCLE START
CYCLE STOP
E-STOP RESET
MACHINE SPEED
LOW HI
ZONE 1
OFF ON
EMERGENCY

Main Controls:

Powering Up:

Ensure lower guards and perimeter guards are in place. Plug power into the machine and connect the air pressure. Turn the power switch to the "ON" position. The touch screen should come on and will indicate "Power Off." Now press the green "E-Stop Reset" button on the panel above the "Emergency Stop."

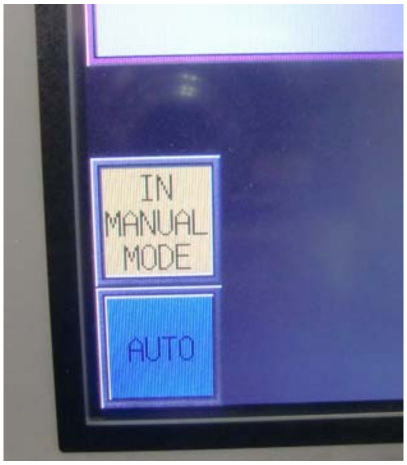


Indicator should now read "Powering Up" and "E-Stop Reset" button should now be lit up green.

Next, verify that the machine is in Auto or Manual Mode.

Manual vs. Auto Mode:

Select "Manual" or "Auto" on the touch screen.



When in "Manual" mode, press and hold "Cycle Start" to cycle the table. When you release "Cycle Start" the table will stop. This is useful for slowly positioning and timing the machine, or for troubleshooting a particular process during a cycle.

When in "Auto" mode, press "Cycle Start" once to start cycling the table and "Cycle Stop" to stop cycling the table. When you press "Cycle Stop" the machine will continue briefly until the heater head rises off of the table. This is to prevent the heater head staying down on a container and seal.

Cycle Speed:

MACHINE SPEED
LOW
HI

Set the Machine Cycle Speed with the dial. Actual speed is indicated on the touch screen.

CYCLES PER MIN.
14

Note: This number will not change unless the machine is in motion either "Manual" or "Auto." This indicator is a measured cycle rate and the machine must be running to measure the rate.

Optimum cycle speed is determined by a variety of factors. During run-off you should have been given optimum cycle speeds. However, a good rule of thumb is, the faster the machine, the higher the temperature and/or the greater the pressure needed for quality seals. Speed may also be dictated by the filling process. Optimum settings for various products and various container styles may be stored in the Recipe menu of the touch screen HMI.

Note: Recipes stored do not change the machine, they are for reference only.

Operating the Machine:

Load cups into the cup drop station. Ensure that the cup drop cams are adjusted to release a cup immediately after the cup pocket on the dial plate stops under the cup drop. If the cup drops too late the sensor underneath will not have read that there is a cup and as such the filler will not be signaled to perform, and the foil will not be placed on the container. For more information on adjusting the cup drop cams see the section on the cup load 101-001-0006.

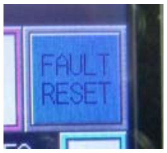
Place foils into the machine. Remember to place foils into the machine upside down as they will be rotated down onto the container.

Turn the “Zone 1 ON/OFF” to the ON position. This will enable the filler to perform, it will enable the foil place to perform and will turn on the temperature controller.

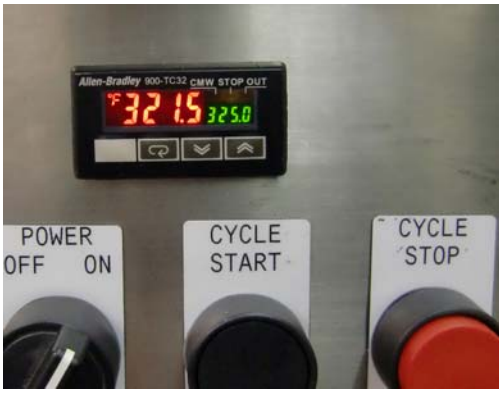
ZONE 1
OFF
ON

You will immediately get a fault showing on the touch screen for “Zone 1 Temp fault.” The temperature controller is factory set to send an alarm when it is 35 or more Degrees above or below the target temperature.

Wait for the temperature to reach the target and then hit the “Fault Reset” button on the touch screen.



The optimum temperature setting should have been given to you during run-off. Generally speaking the cup and seal manufacturers will have the specs for sealing the containers, but this may also vary on operating conditions and cycle speed.

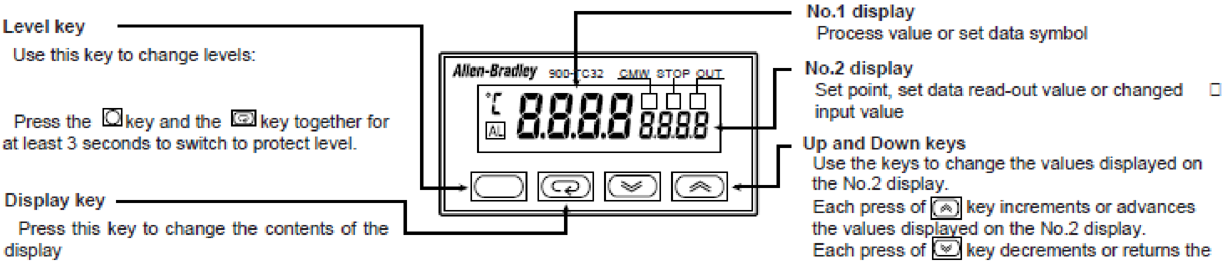


How to set the Temperature:

Example: 80 Degrees = F 80 or 200 Degrees = F200 etc.

The two buttons on the right of the display set the temperature. If the temperature is flashing then the heater control is in tuning mode. There is an alarm on the heater that when the actual temperature falls outside a given range then it sends a fault to the control panel that stops the machine. Wait for the temperature to come back up and reset the fault and restart the machine.

The green digital display indicates the target temperature. The red digital display indicates the actual temperature. It takes about 20-30 minutes for the heater to reach the preset temperature. CAUTION: It takes about 2 hours for the heater to cool off after the machine has been shut down. The faster the machine is running the higher the temperature that you want for consistently good seals.



Level key
Use this key to change levels:

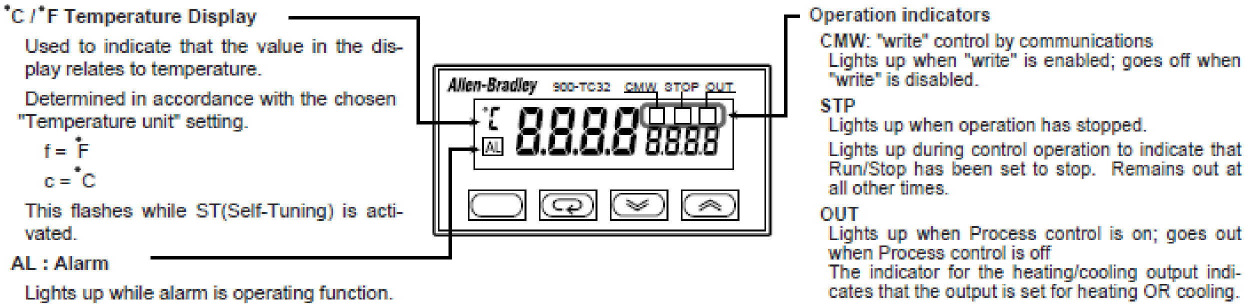
Press the ▢ key and the ▢ key together for at least 3 seconds to switch to protect level.

Display key
Press this key to change the contents of the display

No.1 display
Process value or set data symbol

No.2 display
Set point, set data read-out value or changed ☐ input value

Up and Down keys
Use the keys to change the values displayed on the No.2 display.
Each press of ⌃ key increments or advances the values displayed on the No.2 display.
Each press of ⌄ key decrements or returns the



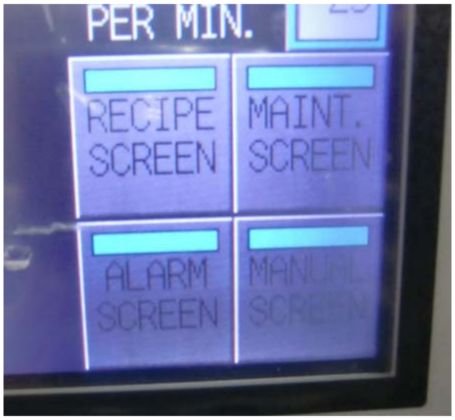
°C / °F Temperature Display
Used to indicate that the value in the display relates to temperature.
Determined in accordance with the chosen "Temperature unit" setting.
f = °F
c = °C
This flashes while ST(Self-Tuning) is activated.

AL : Alarm
Lights up while alarm is operating function.

Operation indicators
CMW: "write" control by communications
Lights up when "write" is enabled; goes off when "write" is disabled.
STP
Lights up when operation has stopped.
Lights up during control operation to indicate that Run/Stop has been set to stop. Remains out at all other times.
OUT
Lights up when Process control is on; goes out when Process control is off
The indicator for the heating/cooling output indicates that the output is set for heating OR cooling.

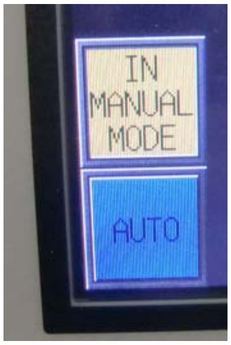
Touch Screen Menus:

There are four main menus on the touch screen.

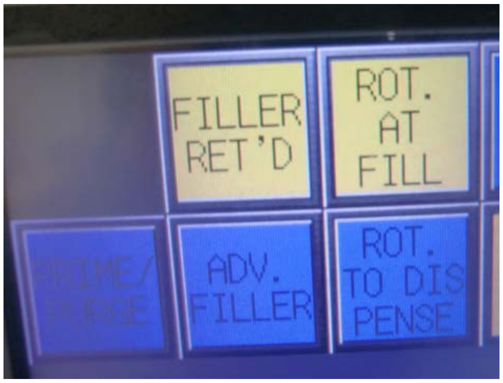


Manual Screen Menu Items:

You may only use the “Manual Screen” options, if the machine is “In Manual Mode” If the machine is “In Auto Mode” they will have no effect.



Prime/ Purge: If you have a Wilpack Packaging factory installed filler, this will turn the rotary valve, actuate the piston to dispense product, turn the rotary valve again and return the piston thereby drawing product up to be dispensed on the next cycle. This is useful for initially priming the filler for the first run or for purging the filler after a run is complete. This is also useful for testing and adjusting fill volume.



“Filler Ret’d” and “Adv. Filler”:

“Filler Ret’d” puts the piston in the position where product is waiting to be dispensed.

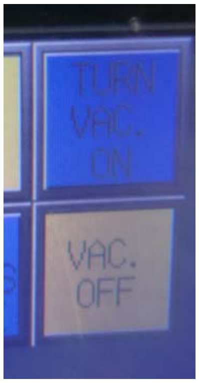
“Adv. Filler” puts the piston in the position where product has been dispensed and is ready to draw product back into the tube from the hopper/source.

“Rot. At Fill” and “Rot. To Dispense”:

“Rot. At Fill” positions the rotary valve so that product can be drawn up into the tube for dispensing.

“Rot. To Dispense” positions the rotary valve so that product can be dispensed.

Foil Place Menu Items:

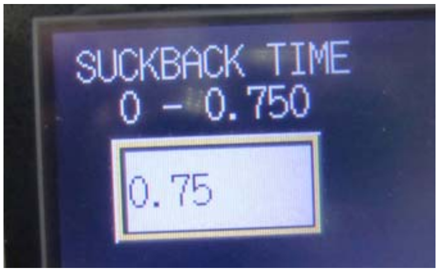


“Turn Vac. On” and “Turn Vac. Off” toggle the vacuum for the foil place station.

To go back to the Main Screen touch the button that indicates so.

MAIN
SCREEN

Maintenance Screen Menu Items

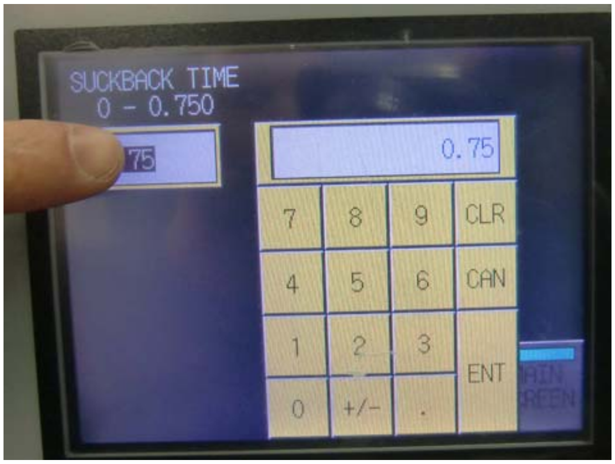


SUCKBACK TIME
0 - 0.750

0.75

In this area is the “Suck Back Time.” This is the interval between the return of the piston and the closing of the rotary valve. Timing this correctly for viscous products will suck a portion of the product from the dispensing nozzle back into the filler so that it does not drip on the dial plate or container sealing surfaces in between fill operations.

Touching the actual time brings up an input screen for changing the time. Note: that you cannot put in a value exceeding the indicated values on screen. When completed, press the “ENT” button to close the input screen.

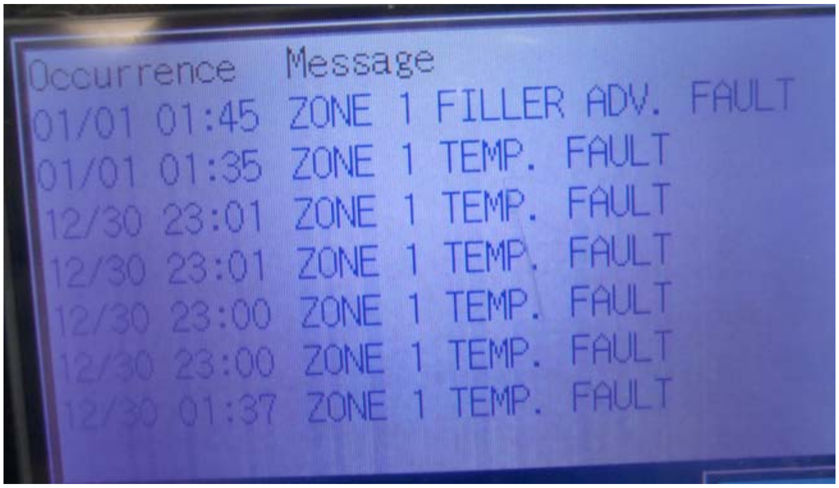


SUCKBACK TIME
0 - 0.750

0.75

Alarm Screen Menu Items

The Alarm Screen is a review of the last 7 faults or alarms, when they occurred and what the alarm was. This can be useful for troubleshooting.

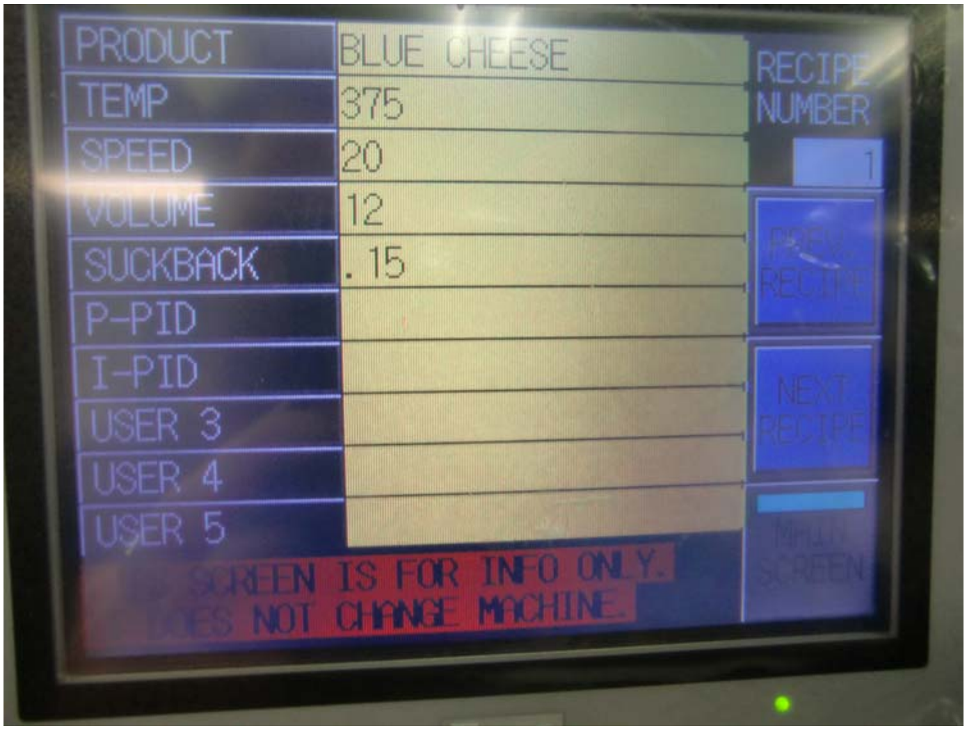


```
Occurrence   Message
01/01 01:45  ZONE 1 FILLER ADV. FAULT
01/01 01:35  ZONE 1 TEMP. FAULT
12/30 23:01  ZONE 1 TEMP. FAULT
12/30 23:01  ZONE 1 TEMP. FAULT
12/30 23:00  ZONE 1 TEMP. FAULT
12/30 23:00  ZONE 1 TEMP. FAULT
12/30 01:37  ZONE 1 TEMP. FAULT
```

Recipe Screen Menu Items

* Note: the flashing red text reads…"changing a recipe has no effect on the machine"
This area is for reference only.

There is room for up to 10 recipes.



PRODUCT	BLUE CHEESE
TEMP	375
SPEED	20
VOLUME	12
SUCKBACK	.15
P-PID	
I-PID	
USER 3	
USER 4	
USER 5	

SCREEN IS FOR INFO ONLY.
DOES NOT CHANGE MACHINE.

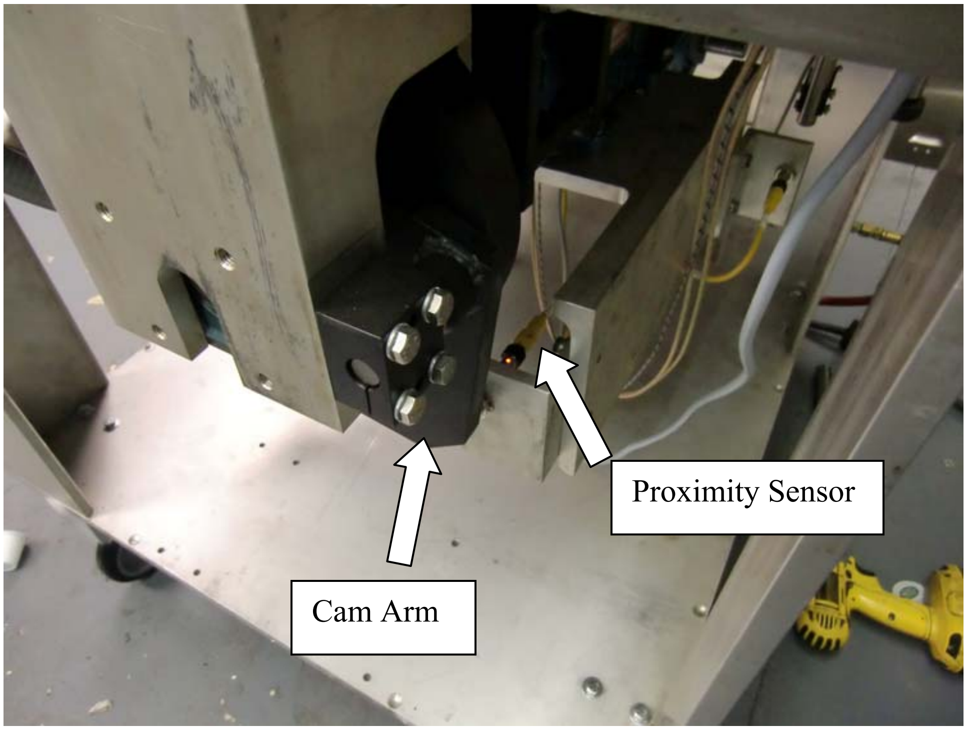
RECIPE NUMBER
1
PREV RECIPE
NEXT RECIPE
MAIN SCREEN

PREV RECIPE
NEXT RECIPE

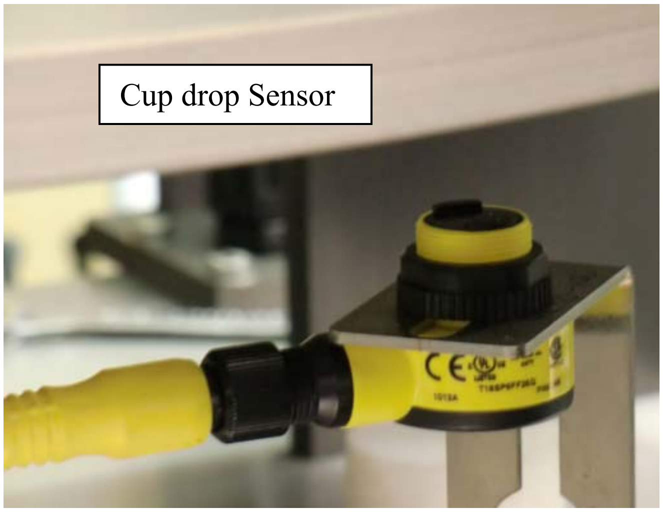
Use "Prev Recipe" and "Next Recipe" to toggle between recipes. If you touch a recipe category name, an input screen will appear to change the name of that category. If you touch a recipe value, an input screen will appear to change the value of the category.

Machine Operation Basics

Home Position:



If looking at the underside of the machine from the eject side, look for the Cam Arm and the proximity sensor located nearby. When the arm is back far enough to interact with the proximity sensor (the sensor will be lit up) then the machine is in "Home Position."



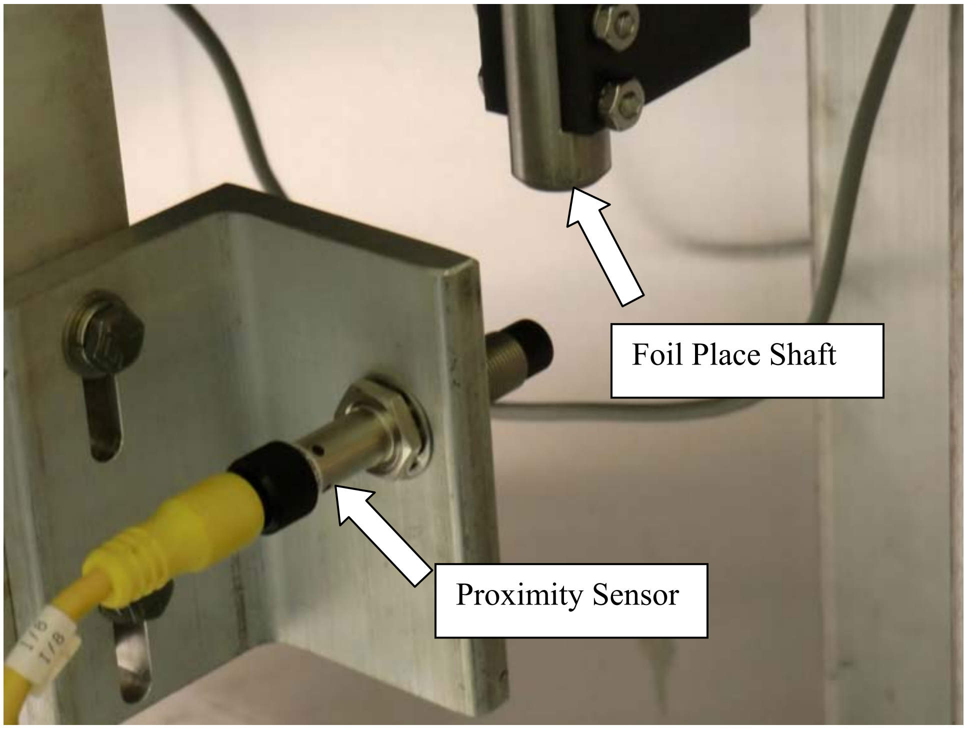
In "Home Position" the machine is looking for a cup with the cup drop sensor located just under the dial plate where the cup drops.

If the machine does not detect a cup in place while the machine is in "Home Position" then the for the next 6 cycles the machine logic will always assume there is not cup in that index, and as such will not tell the filler to perform, and will not place a foil. Adjust the cup drop to ensure a cup falls into the pocket just as the table stops moving and it should be read when the machine reaches "Home Position"

"Home Position" also tells the foil place station to turn the vacuum on for the next foil. However if there was no cup detected in the pocket that is currently one index away from the foil place station, then the logic will override this and not allow the foil to be picked up. There is no sense placing a foil if there is no cup.

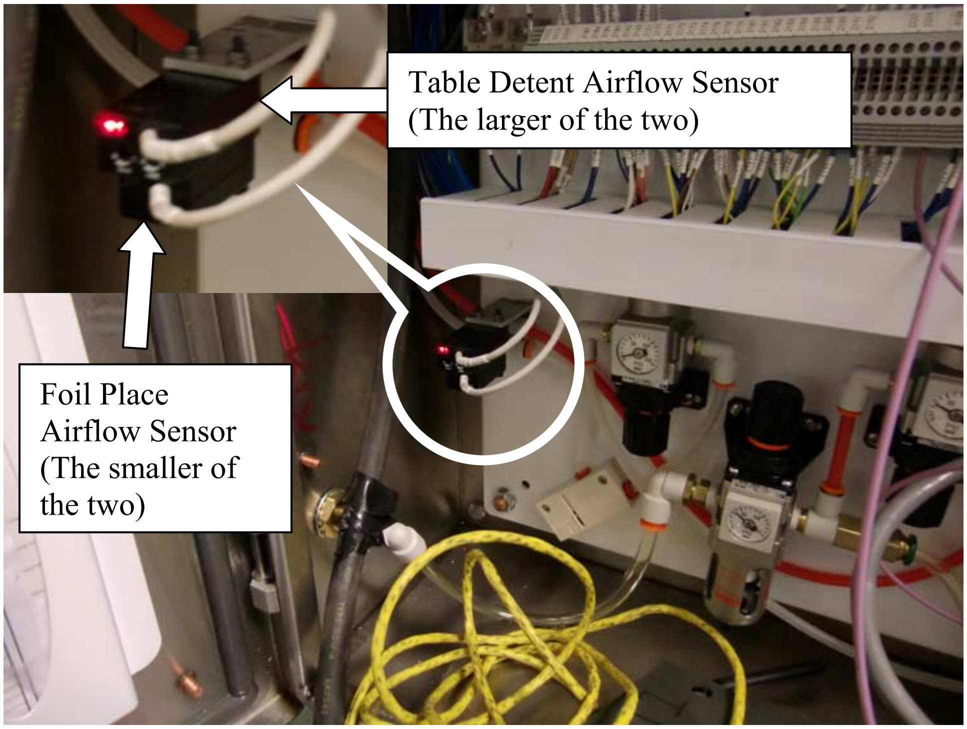
Foil Place Proximity Sensor:

If looking at the underside of the machine from the foil place and heat seal side of the machine you should see a proximity sensor that interacts with the foil place shaft.



When the foil place shaft moves down and triggers the Proximity Sensor then that tells the vacuum holding the foil to turn off, thereby dispensing the foil onto the container. If there is another cup in the next index then the vacuum will turn back on when the “Home Position” is reached.

Foil Place and Table Detent Airflow Sensors



The foil place sensor detects airflow when there is a vacuum created and holding a foil. If air is flowing then it indicates a foil was not picked up (maybe the stack was empty) or a foil fell off before the vacuum was shut off (maybe the vacuum was too weak). Regardless, if there is supposed to be a vacuum and there is airflow it will create a fault. Determine the cause and reset the fault on the HMI prior to cycling the machine again.

The Table Detent sensor measures airflow coming up through the support of the dial plate. There is constant air pressure on the table. If the table comes out of detent, then air flows and this triggers a fault that immediately shuts the machine off. This is to prevent the machine from jamming and an additional safety feature. If the table comes out of detent rotate it back into detent. There is only one position that the table can be in and you should be able to feel it go back into detent. You may need to wiggle it into position. Once this is done, reset the fault on the HMI before cycling the machine again.

Bill of Material - Manufactured

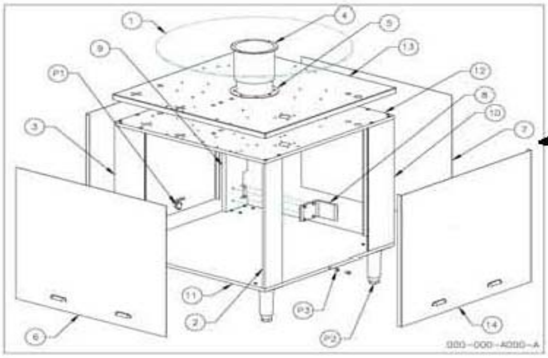
Assembly Part No.: **000-000-0002**

Unit Description: **Base Unit**

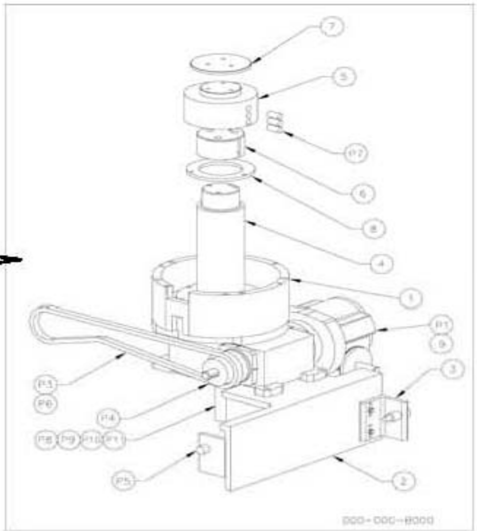
Model: **Universal**

Release Date: **10/1/2009 0:00**

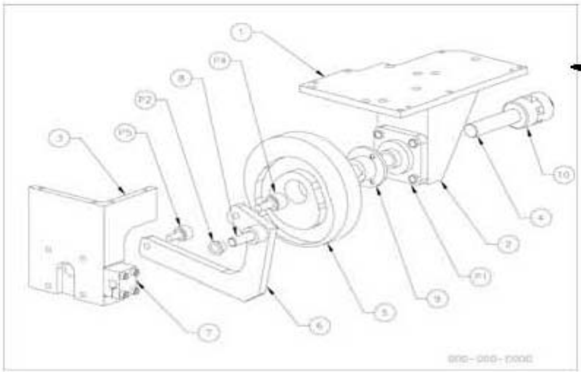
ITEM	QTY.	PART NO.	DESCRIPTION	
1	1	000-000-A000-A	Base Sub-Ass'y.	B.O.M.
2	1	000-000-B000	Drive Sub-Ass'y.	B.O.M.
3	1	000-000-C000	Cam Sub-Ass'y.	B.O.M.
4	1	000-000-A001	Cup Load Sub-Ass'y.	B.O.M.
5	1	000-000-A004	Foil Place Sub-Ass'y.	B.O.M.
6	1	000-000-A005	Seal Sub-Ass'y.	B.O.M.
7	1	000-000-A006	Unload Sub-Ass'y.	B.O.M.
8	1	000-000-A008-B	Electrical Panel Sub-Ass'y.	B.O.M.


P1
P2
P3
000-000-A000-A

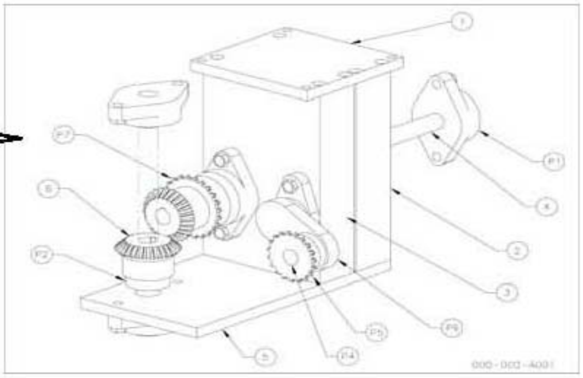
1


1
2
3
4
5
6
7
8
9
P1
P2
P3
P4
P5
P6
P8
P9
P10
P11
P14
000-000-B000

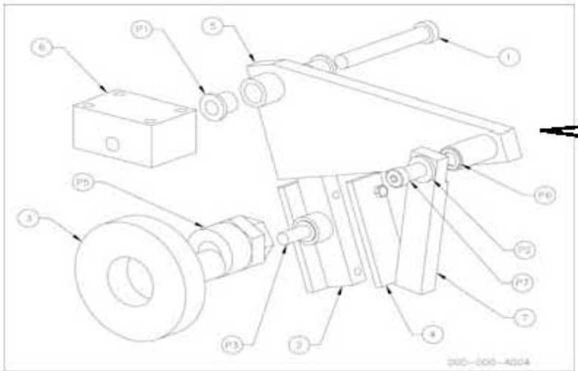
2


P1
P2
P5
P9
000-000-D000

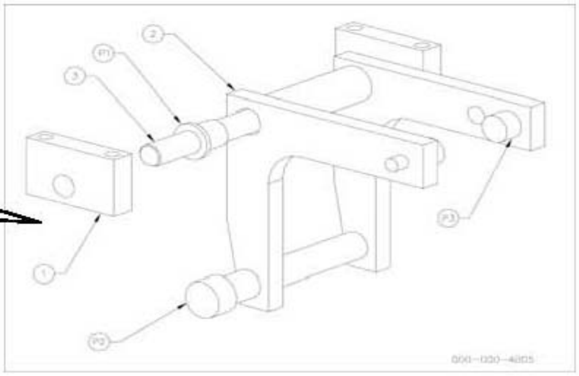
3


1
2
3
4
5
6
P1
P2
P4
P5
P7
P8
000-002-A001

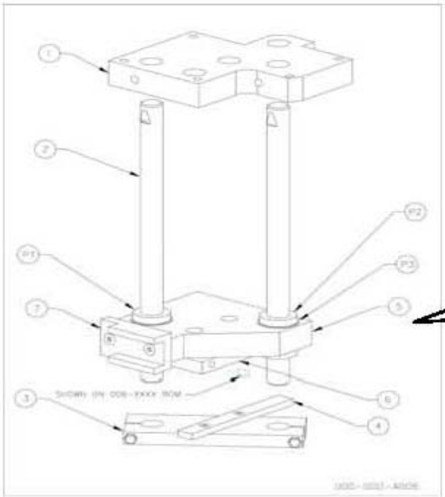
4


1
2
3
4
5
6
7
P1
P2
P3
P5
P6
P7
000-000-A004

5


1
2
3
P1
P2
P3
000-000-A005

6


1
2
3
4
5
6
7
P1
P2
P3
SHOWN ON 006-XXXX BOM
000-000-A006

7

Base Unit 000-000-A000-A

The Base Unit consists of 4 legs and the frame with base and top units.

The three stainless steel sides are held on with the P4 detents and the two sides #14 are held in place with a bolt. Notice that Item 10 (Qty 2), is the last piece to be fitted over the other two sides.

Bill of Material - Manufactured

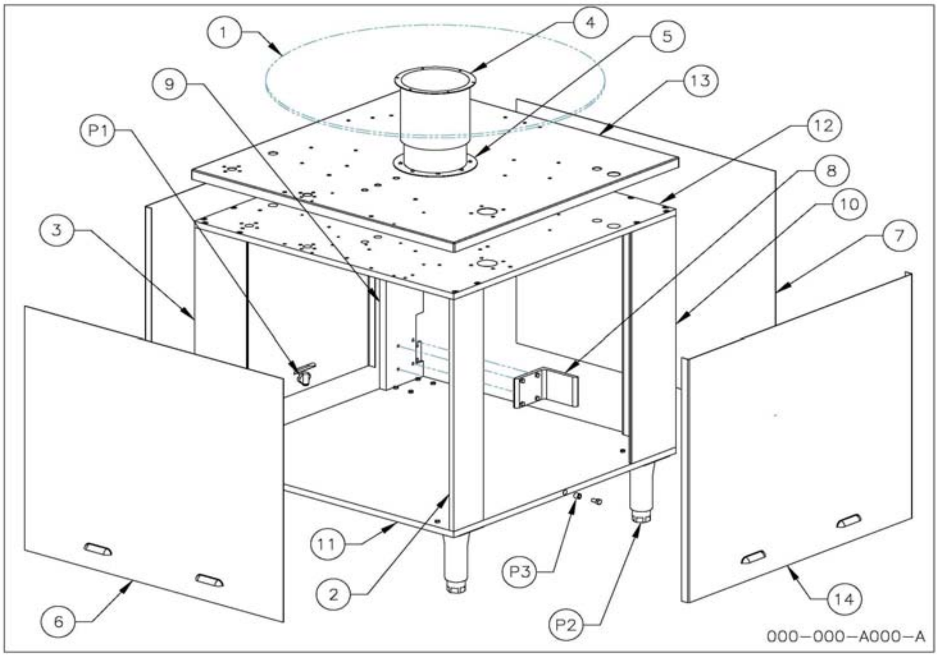
Assembly Part No.: **000-000-A000-A**

Unit Description: **Base Unit**

Model: **Universal**

Release Date: **8/31/2009 0:00**

ITEM	QTY.	PART NO.	DESCRIPTION
1	1	000-0001	Dial Plate Blank
2	1	000-0396	Leg
3	1	000-0397	Leg
4	1	000-0418	Upper Splash Guard
5	1	000-0419	Lower Splash Guard
6	1	000-0513	Rear Cover
7	1	000-1531	Front Panel
8	2	000-1532	Bracket
9	1	000-1533	Leg
10	1	000-1534	Leg
11	1	000-1536	Base Plate
12	1	000-1537	Top Plate
13	1	000-1538	Top Cover
14	2	000-1539	Side Cover



Bill of Material - Purchased

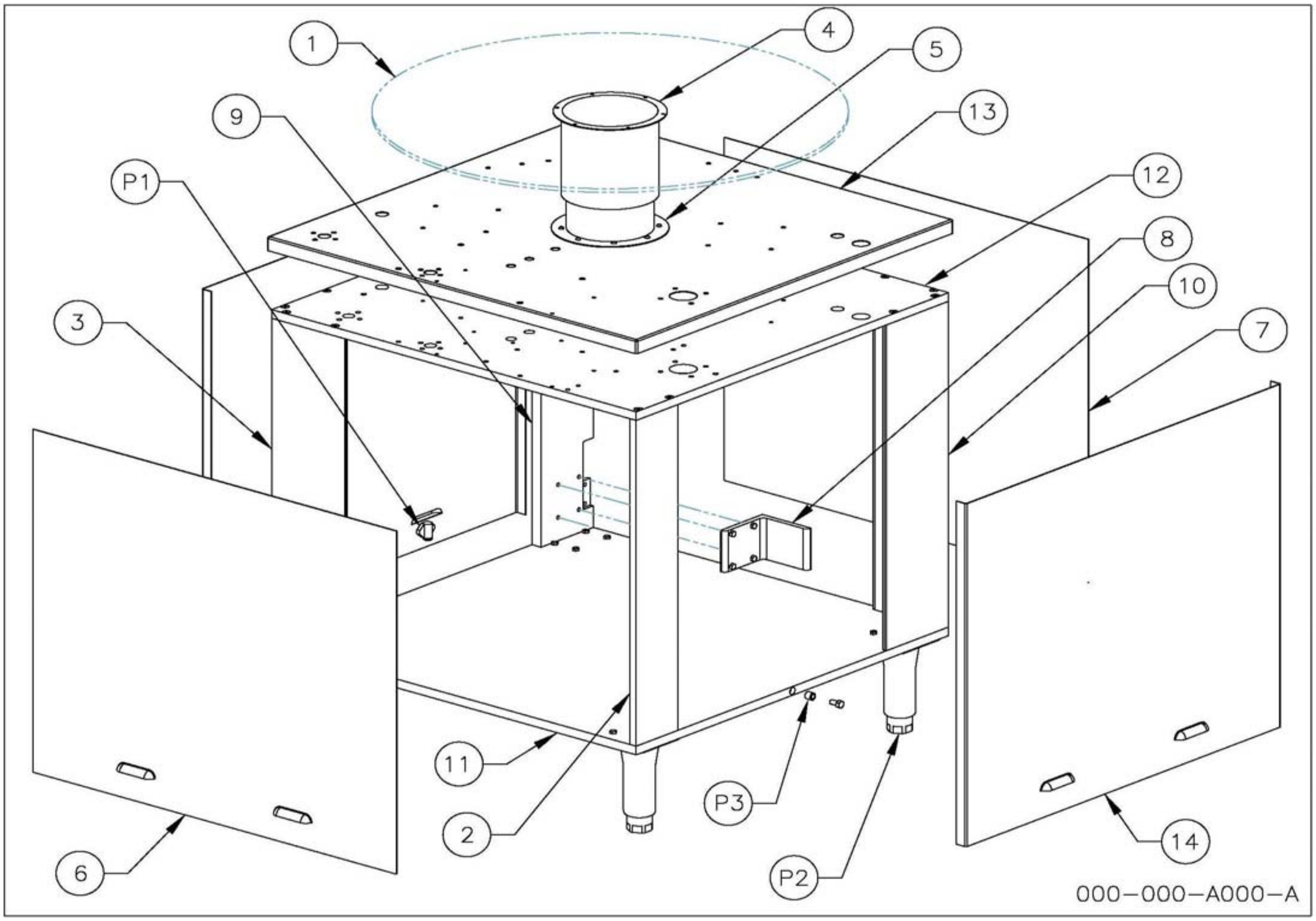
Assembly Part No.: **000-000-A000-A**

Unit Description: **Base Unit**

Model: **Universal**

Release Date: **8/31/2009 0:00**

ITEM	QTY.	PART NO.	DESCRIPTION
P1	6	P00-0036	Spring Stop
P2	4	P00-0071	Leg
P3	2	P00-0072	Threaded Insert


1
4
5
9
13
P1
12
8
3
10
7
11
P3
2
14
6
P2
000-000-A000-A

Base Unit 000-000-B000

Drive Sub Assembly

The Camco Drive unit and Baldor Motor are the central drive units of the machine.

The center shaft protruding up-wards from the motor is fitted with a air seal. Should the dial be broken loose from its home position, the detents, P7, disengage, and the air pressure switch (not-shown) senses the loss of pressure.

This pressure switch (not-shown) can only be reset in the home position. Again, this is a single position on the dial. Rotate the dial until the home position is achieved and the air sensor will de-activate. Press the Green Start button on the Control Panel to re-start machine.

Also, Item 3, houses the sensor for the release of the foil from the sucker cup on the foil place station.

Item P5, shows the sensor for the home position of the machine.

Bill of Material - Manufactured

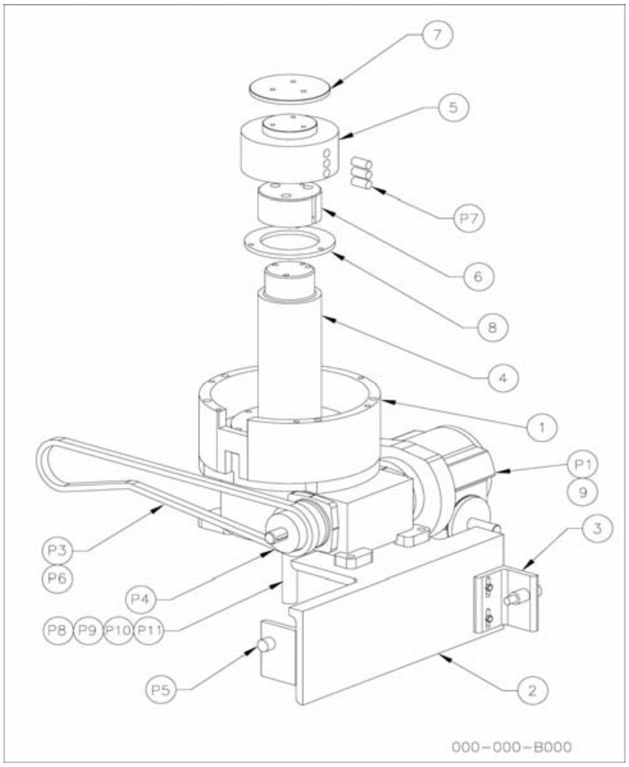
Assembly Part No.: **000-000-B000**

Unit Description: **Base Unit** **Drive Sub Assembly**

Model: **Universal**

Release Date: **04/22/03**

ITEM	QTY.	PART NO.	DESCRIPTION
1	1	000-0417	Indexer Support
2	1	000-0604	Bracket Mount
3	2	000-0656	Prox. Bracket
4	1	000-0959	Dial Plate Riser
5	1	000-0960	Hub
6	1	000-0961	Detent
7	1	000-0962	Cap
8	1	000-0963	Retaining Ring
9	1	000-0982	Indexer
10	1	000-1554	Gaslet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000-000-B000

Bill of Material - Purchased

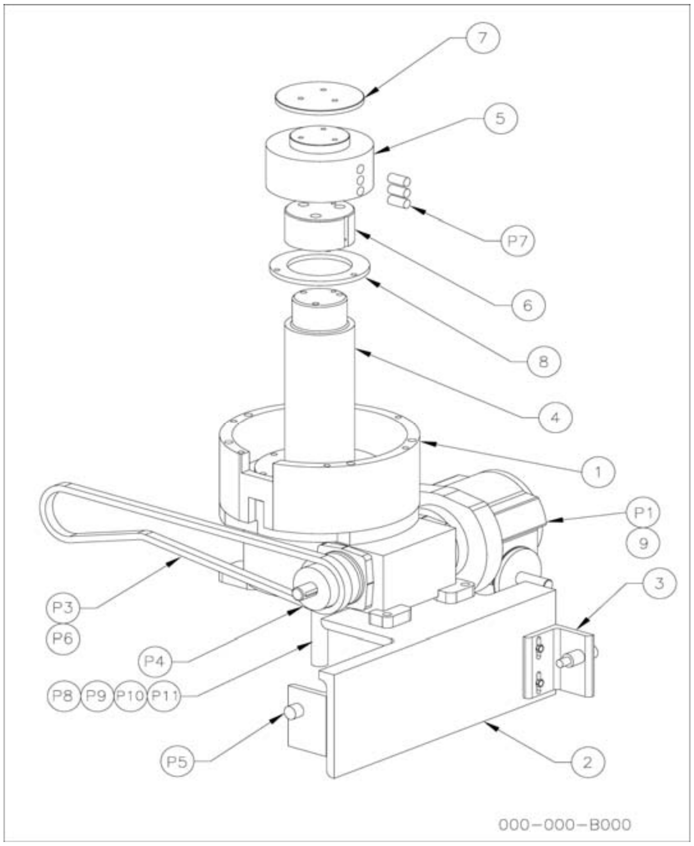
Assembly Part No.: **000-000-B000**

Unit Description: **Base Unit** **Drive Sub Assembly**

Model: **Universal**

Release Date: **4/22/2003 0:00**

ITEM	QTY.	PART NO.	DESCRIPTION
P1	1	P00-0001	Motor - 1/2 HP 56C Frame
PA	1	P00-0012	Indexer
P3	1	P00-0016	Chain
P4	1	P00-0018	Sprocket
P5	2	P00-0037	Proximity Sensor
P6	1	P00-0038	Chain Connector
P7	3	P00-0039	Spring Plunger
P8	1	P00-0050	Pipe Coupling
P9	1	P00-0051	Pipe Nipple
P10	1	P00-0052	Pressure Switch
P11	1	P04-0009	Rotary Elbow



Base Unit 000-000-C000

This is the lifting unit for the completed part unload station.

The P5, sensor, (as noted in Base Unit, Camco Drive) reads at Item 6, on the cam arm.

Item 10, is attached directly to the Camco Drive.

Grease zirks are located on two (2) of the P1 (Pillow Block) locations.

Clean and lubricate Item 5, Cam Paths, weekly.

Bill of Material - Manufactured

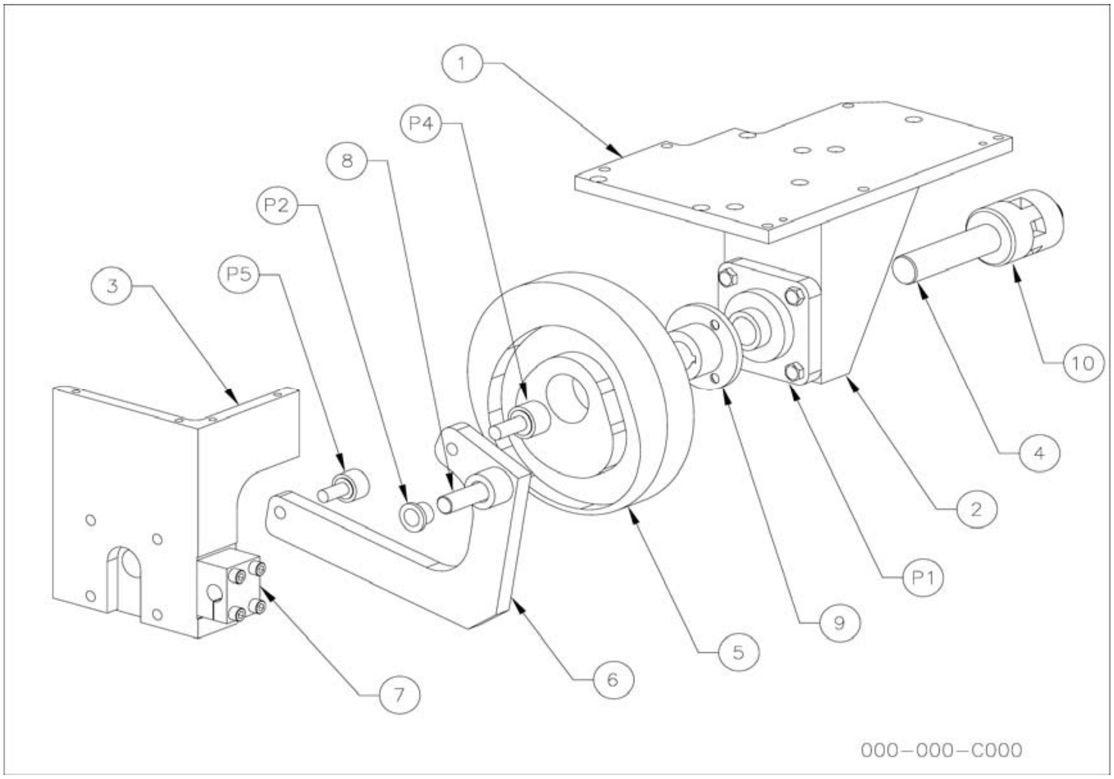
Assembly Part No.: 000-000-C000

Unit Description: Base Unit

Model: Universal

Release Date: 04/22/03

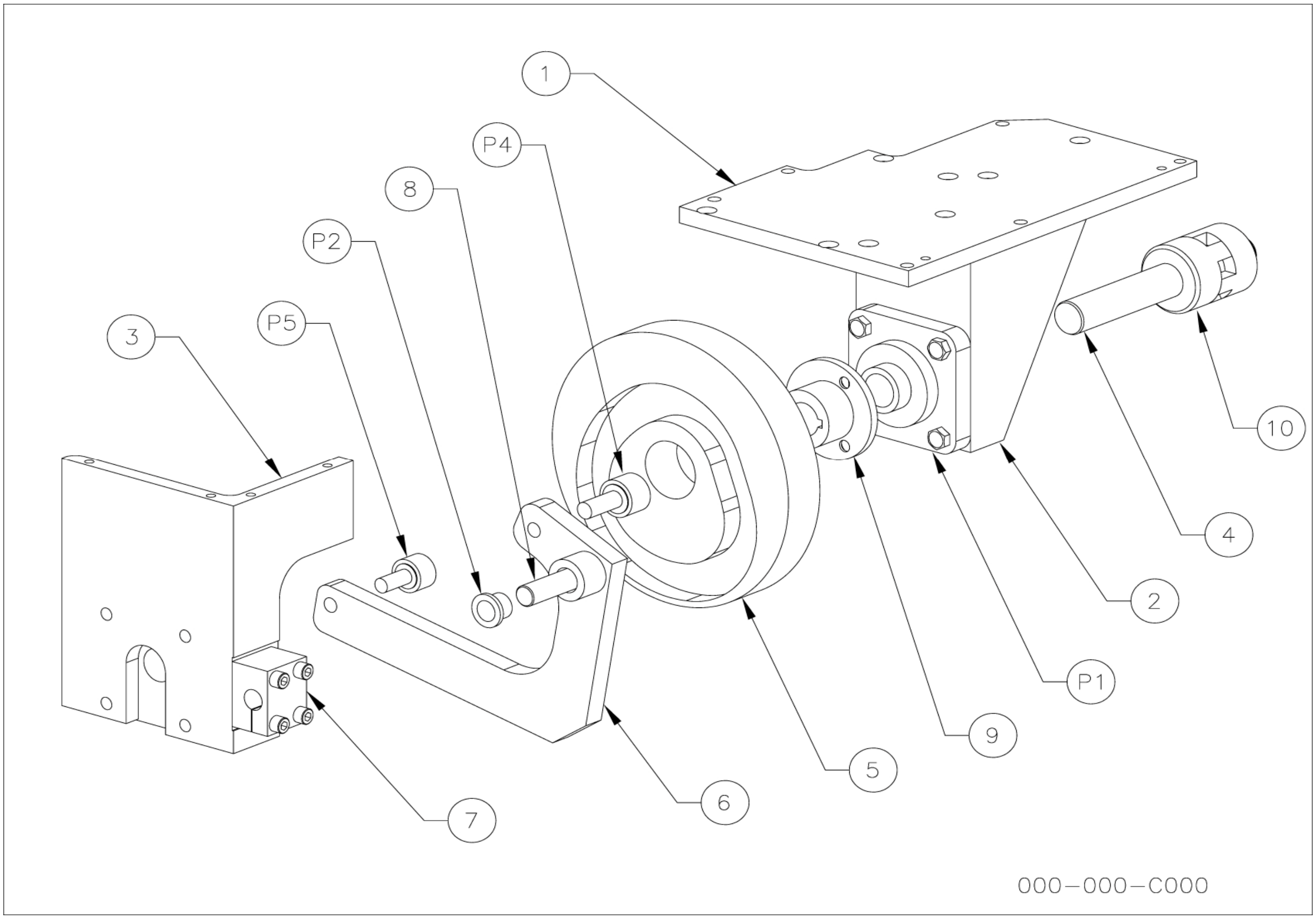
ITEM	QTY.	PART NO.	DESCRIPTION
1	1	000-0403	Sub Plate
2	1	000-0407	Support
3	1	000-0408	Support
4	1	000-0427	Drive Shaft
5	1	000-0428	Cam - Compound
6	1	000-0429	Cam Arm
7	1	000-0430	Pivot Block
8	1	000-0440	Pivot Pin
9	1	000-0939	Drive Hub
10	1	000-1008	Coupler



Bill of Material - Purchased

Assembly Part No.:	**000-000-C000**
Unit Description:	**Base Unit**
Model:	**Universal**
Release Date:	**4/22/2003 0:00**

ITEM	QTY.	PART NO.	DESCRIPTION
P1	2	P00-0003	Bearing - 4 Bolt Flange
P2	2	P00-0005	Flange Bearing
PA	1	P00-0017	Coupling
P4	1	P00-0019	Cam Follower
P5	1	P00-0020	Cam Follower
PA	1	P00-0029	Core Pin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000-000-C000

Cup Load Sub Assembly 000-000-A001

The Cup Load Station is driven by this unit. The chain that is attached to the Camco Drive powers this station.

The chain has an idler, P5, for take up of slack.

Grease zirks are located at P4, and each of the four (4) P1 (Pillow Block), locations.

Bill of Material - Manufactured

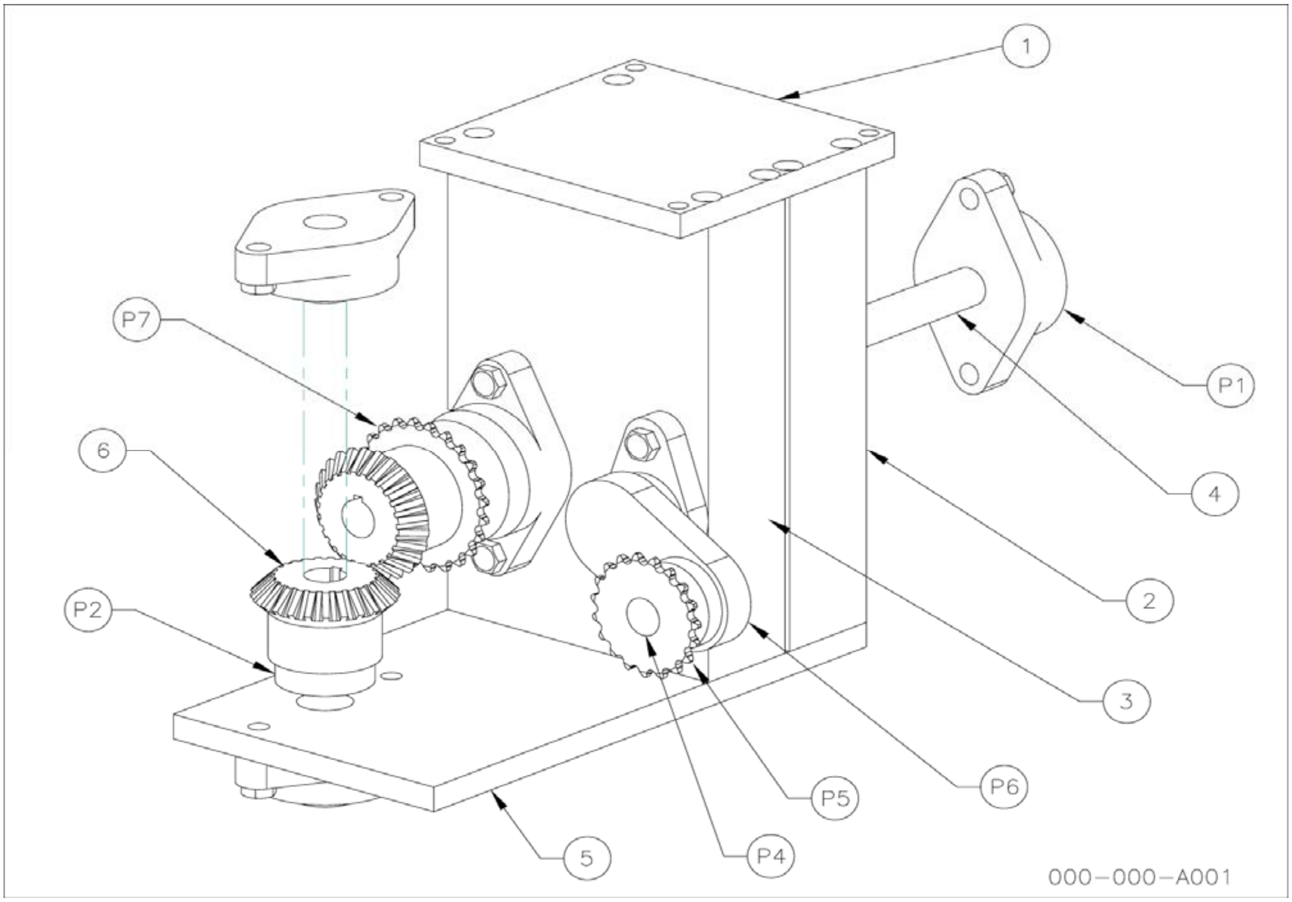
Assembly Part No.: **000-000-A001**

Unit Description: **Cup Load Sub Assembly**

Model: **Universal**

Release Date: **04/22/03**

ITEM	QTY.	PART NO.	DESCRIPTION
1	1	000-0402	Sub Plate - Cup Load
2	1	000-0405	Support - Cup Load
3	1	000-0406	Support - Cup Load
4	1	000-0416	Shaft - Cup Load
5	1	000-0600	Bearing Plate
6	2	000-0921	Miter Gear



Bill of Material - Purchased

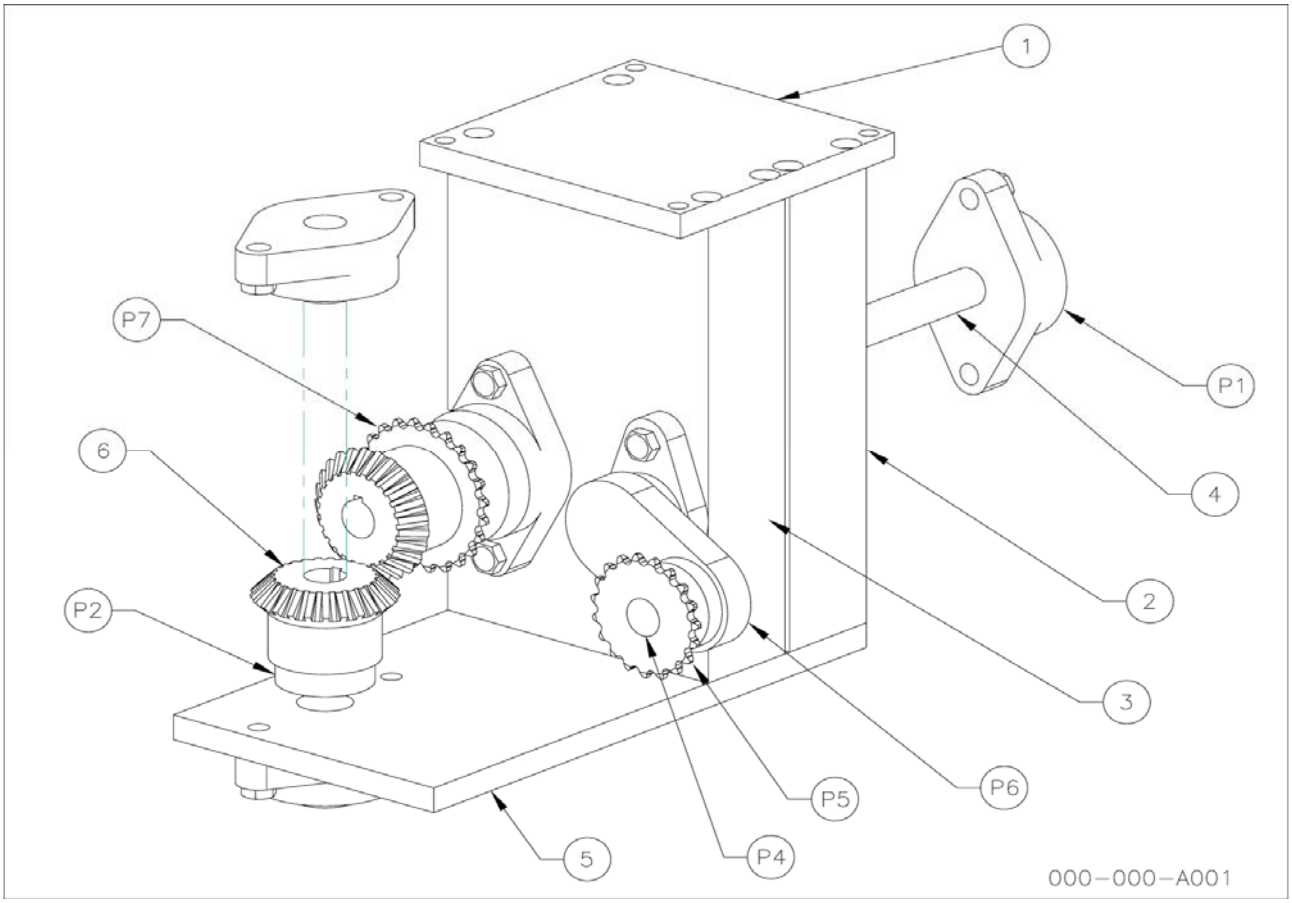
Assembly Part No.: **000-000-A001**

Unit Description: **Cup Load Sub Assembly**

Model: **Universal**

Release Date: **04/22/03**

ITEM	QTY.	PART NO.	DESCRIPTION
P1	4	P00-0002	Bearing - 2 Bolt Fange
P2	1	P00-0004	Clamp Collar
PA	2	P00-0008	Miter Gear
P4	1	P00-0009	Idler Shaft
P5	1	P00-0010	Idler Sprocket
P6	1	P00-0011	Tensioner
P7	1	P00-0018	Sprocket



Foil Place Sub Assembly 000-000-A004

This eccentric drive raises and lowers the foil place suction cup.

There are no height adjustments on this unit.

Bill of Material - Manufactured

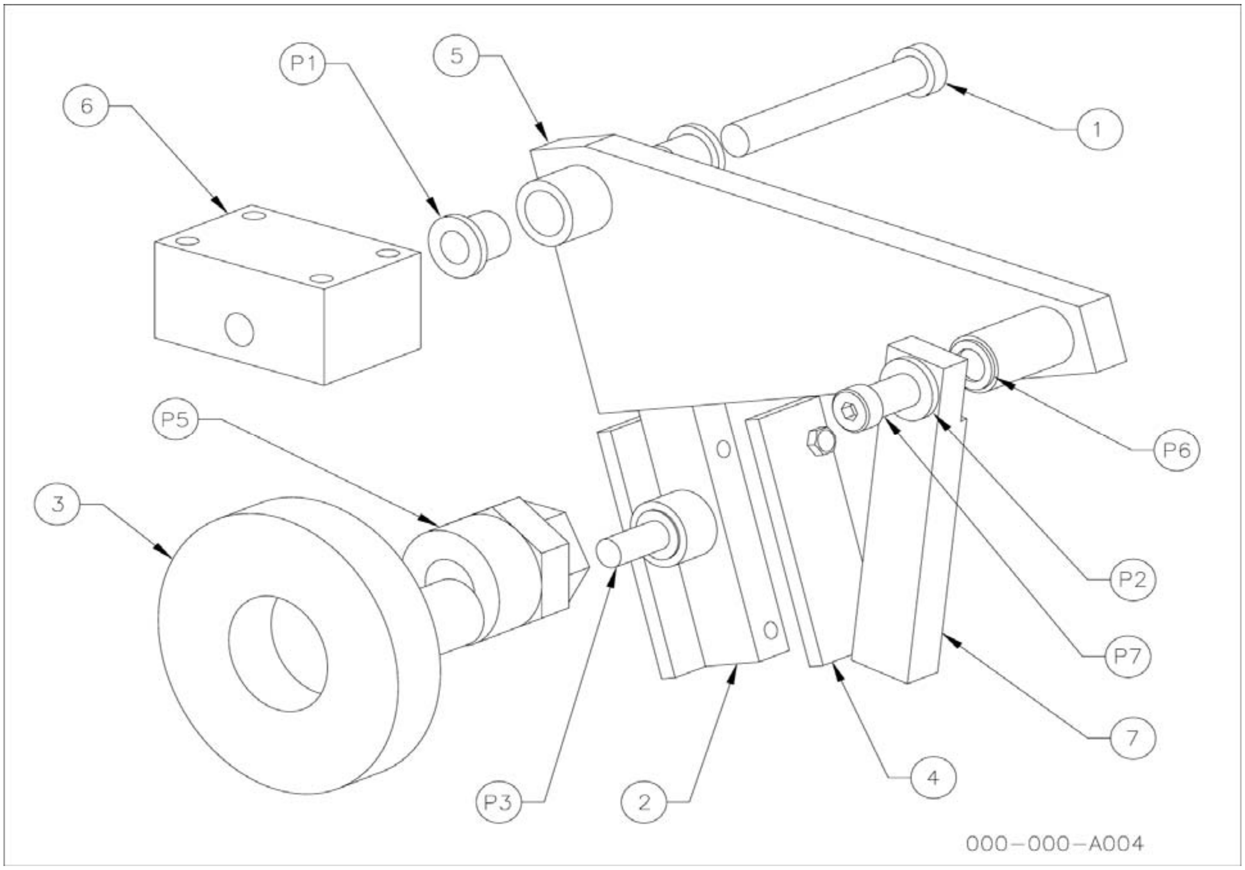
Assembly Part No.: **000-000-A004**

Unit Description: **Foil Place Sub Assembly**

Model: **Universal**

Release Date: **4/22/2003 0:00**

ITEM	QTY.	PART NO.	DESCRIPTION
1	1	000-0413	Pivot Pin
2	1	000-0641	Lever Arm
3	1	000-0649	Eccentric Drive
4	2	000-0650	Cam Plate
5	1	000-0651	Lever
6	1	000-0652	Pivot Block
7	1	000-0956	Link



Bill of Material - Purchased

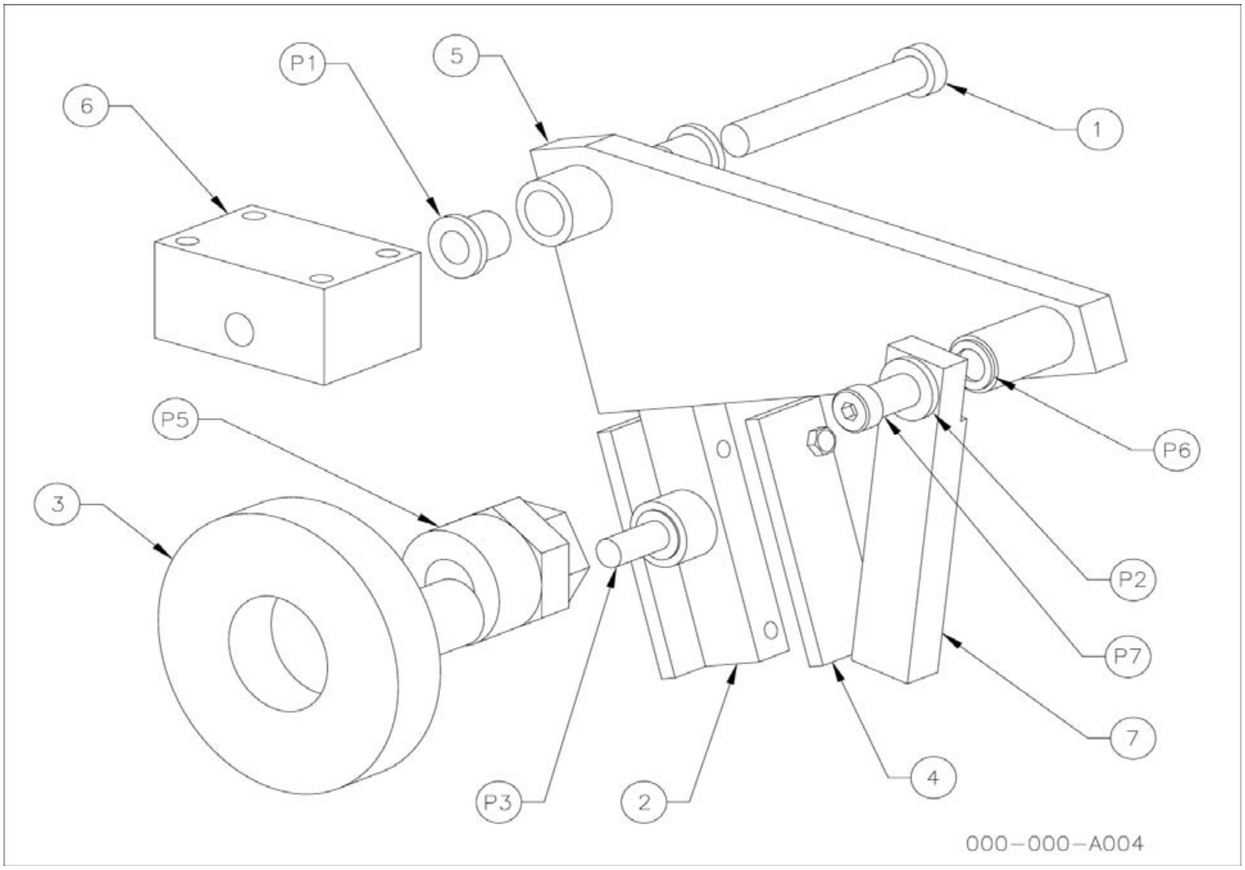
Assembly Part No.: **000-000-A004**

Unit Description: **Foil Place Sub Assembly**

Model: **Universal**

Release Date: **4/22/2003 0:00**

ITEM	QTY.	PART NO.	DESCRIPTION
P1	2	P00-0006	Flange Bearing
P2	1	P00-0007	Flange Bearing
P3	1	P00-0020	Cam Follower
PA	1	P00-0028	Core Pin
P5	1	P00-0030	Bushing
P6	1	P00-0040	Thrust Bearing
P7	1	P00-0042	Shoulder Screw



Heat Seal Sub Assembly 000-000-A005

This unit is driven by the base unit lift cam and raises and lowers the heat seal.

There is no height adjustment on this unit.

Bill of Material - Manufactured

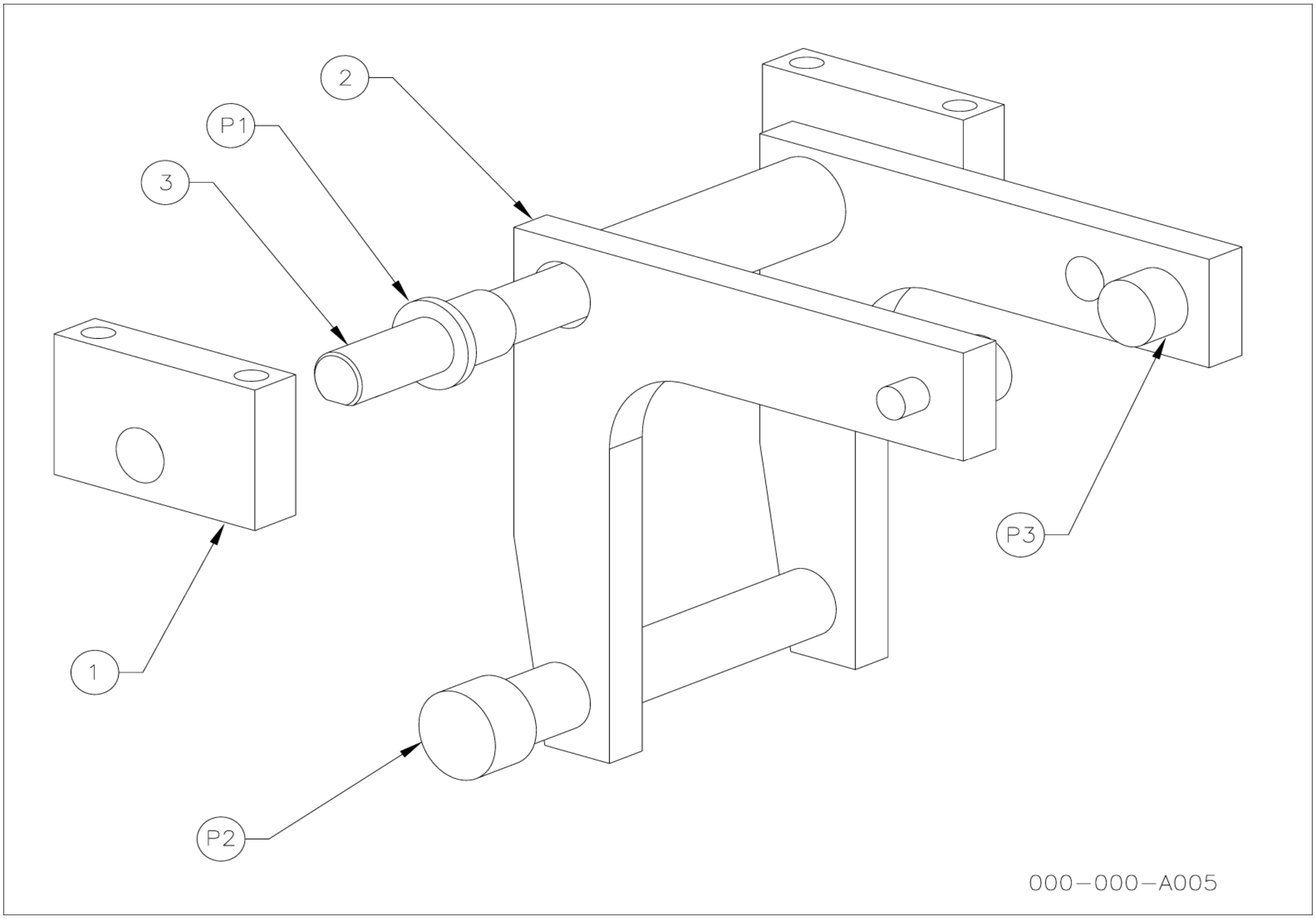
Assembly Part No.: **000-000-A005**

Unit Description: **Heat Seal Sub Assembly**

Model: **Universal**

Release Date: **4/22/2003 0:00**

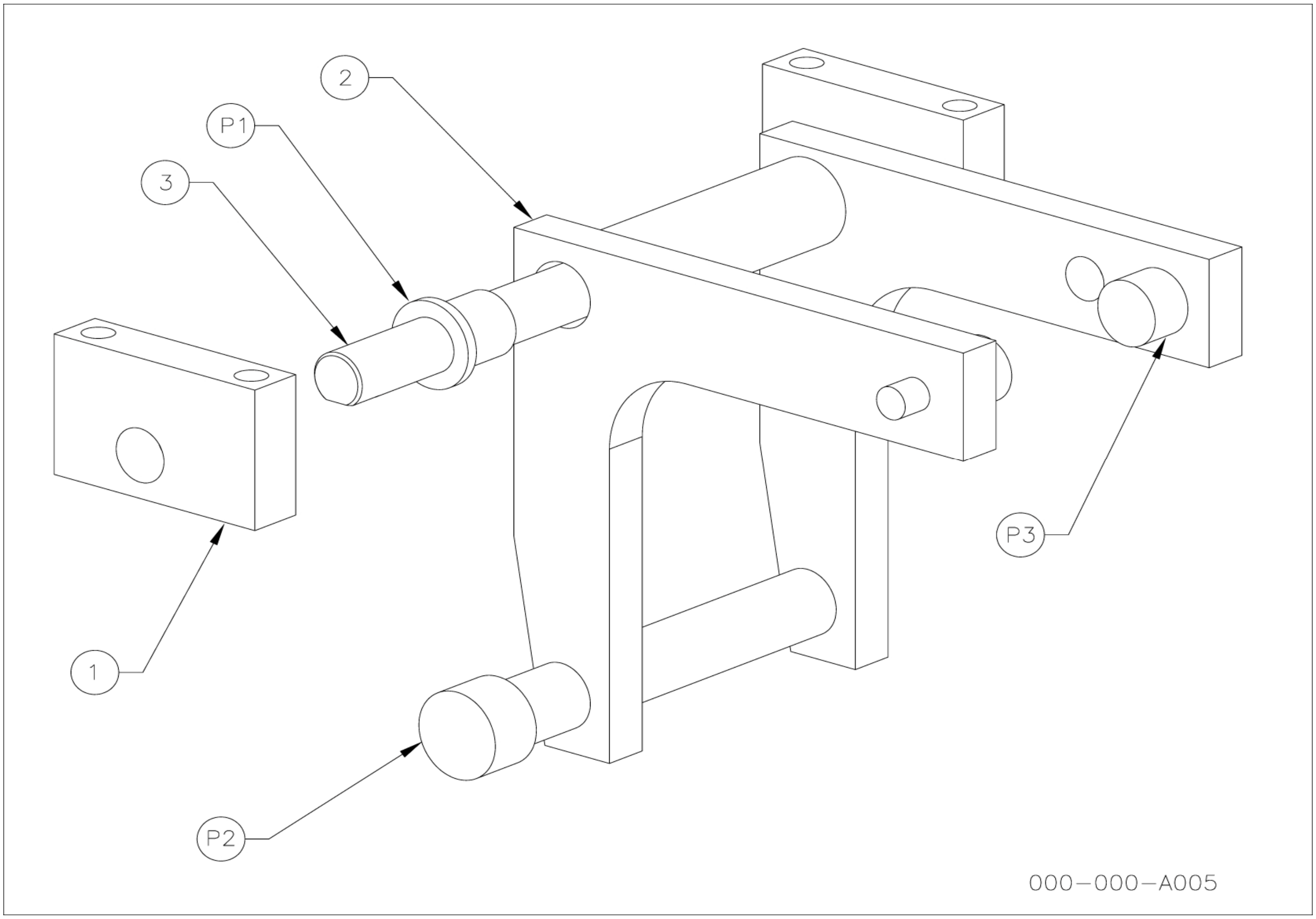
ITEM	QTY.	PART NO.	DESCRIPTION
1	2	000-0421	Pivot Block - Seal
2	1	000-0422	Cam Arm -Seal
3	1	000-0423	Pivot Shaft - Seal



Bill of Material - Purchased

Assembly Part No.:	**000-000-A005**
Unit Description:	**Heat Seal Sub Assembly**
Model:	**Universal**
Release Date:	**4/22/2003 0:00**

ITEM	QTY.	PART NO.	DESCRIPTION
P1	2	P00-0007	Flange Bearing
P2	1	P00-0020	Cam Follower
P3	2	P00-0021	Cam Follower



Unload Sub Assembly 000-000-A006

This unit is driven by the base unit lift cam and raises and lowers the unload shafts.

There is no height adjustment on this unit.

NOTE: Item 3 and Item 4 are used as a reset bar for the unload shafts. This unit may need to be raised or lowered for proper reset.

Bill of Material - Manufactured

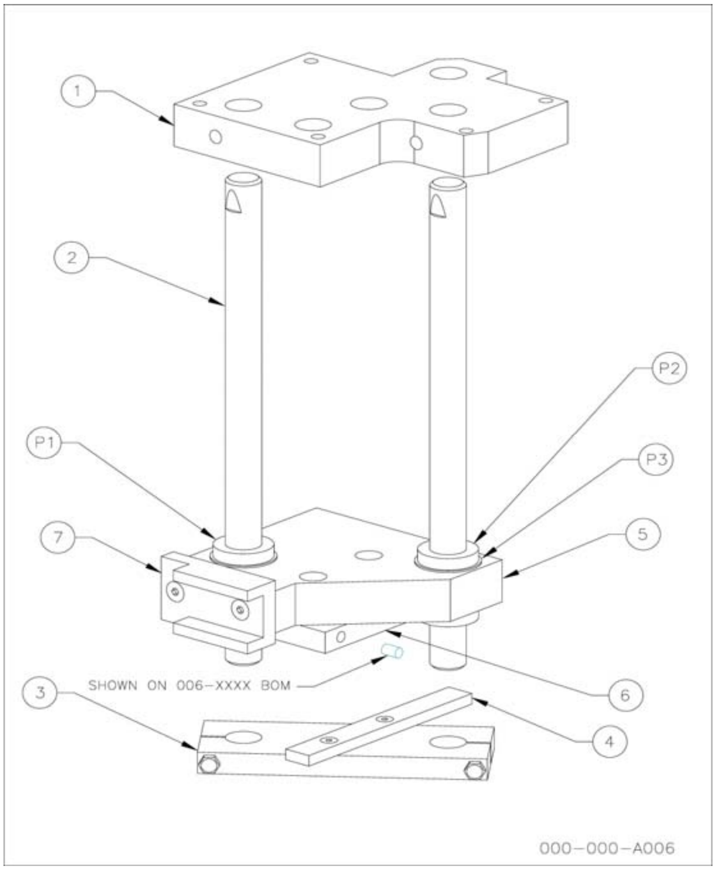
Assembly Part No.: **000-000-A006**

Unit Description: **Unload Sub Assembly**

Model: **Universal**

Release Date: **4/22/2003 0:00**

ITEM	QTY.	PART NO.	DESCRIPTION
1	1	000-0431	Unload Block
2	2	000-0432	Unload Support Shaft
3	1	000-0433	Shaft Tie
4	1	000-0434	Reset Bar
5	1	000-0435	Drive Block
6	1	000-0436	Release Block
7	1	000-0437	Drive Yolk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000–000–A006

Bill of Material - Purchased

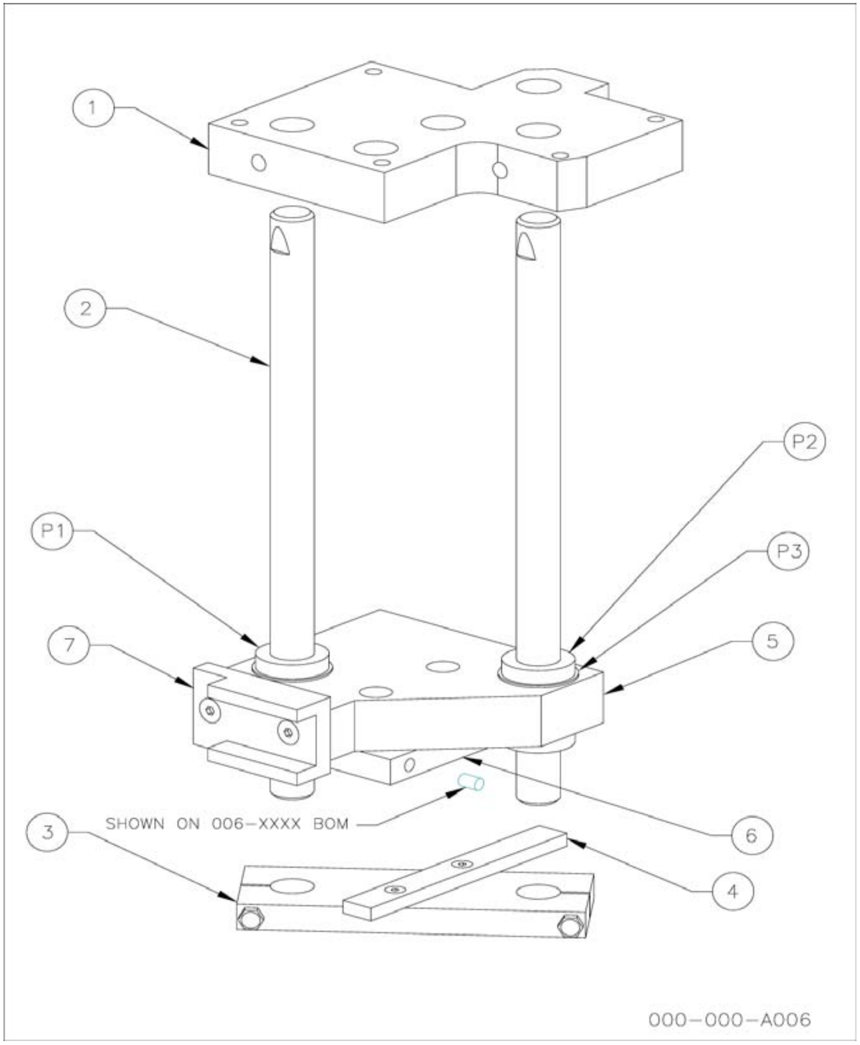
Assembly Part No.: **000-000-A006**

Unit Description: **Unload Sub Assembly**

Model: **Universal**

Release Date: **4/22/2003 0:00**

ITEM	QTY.	PART NO.	DESCRIPTION
P1	1	P00-0025	Linear Bearing
P2	1	P00-0026	Linear Bearing
P3	4	P00-0032	Retaining Ring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000-000-A006

Bill of Material - Manufactured

Assembly Part No.: **000-000-A008-B**

Unit Description: **Electrical Panel Sub Assembly**

Model: **Universal**

Release Date: **5/27/2010 0:00**

ITEM	QTY.	PART NO.	DESCRIPTION
1	1	000-1576	Electrical Enclosure
2	1	000-1540	Sub Panel
3	1	000-1570	Control Panel
5	1	000-1569	Panel Bracket
6	1	000-1578	Fitting Plate
7	1	008-1601	8' - 3/4" Flexible Conduit

Bill of Material - Purchased

Assembly Part No.: 000-000-A008-B

Unit Description: Electrical Panel Sub Assembly

Model: Universal

Release Date: 5/27/2010 0:00

ITEM	QTY.	PART NO.	DESCRIPTION
P2	1	P08-0051	Sup Panel

Cup Load 101-001-0006

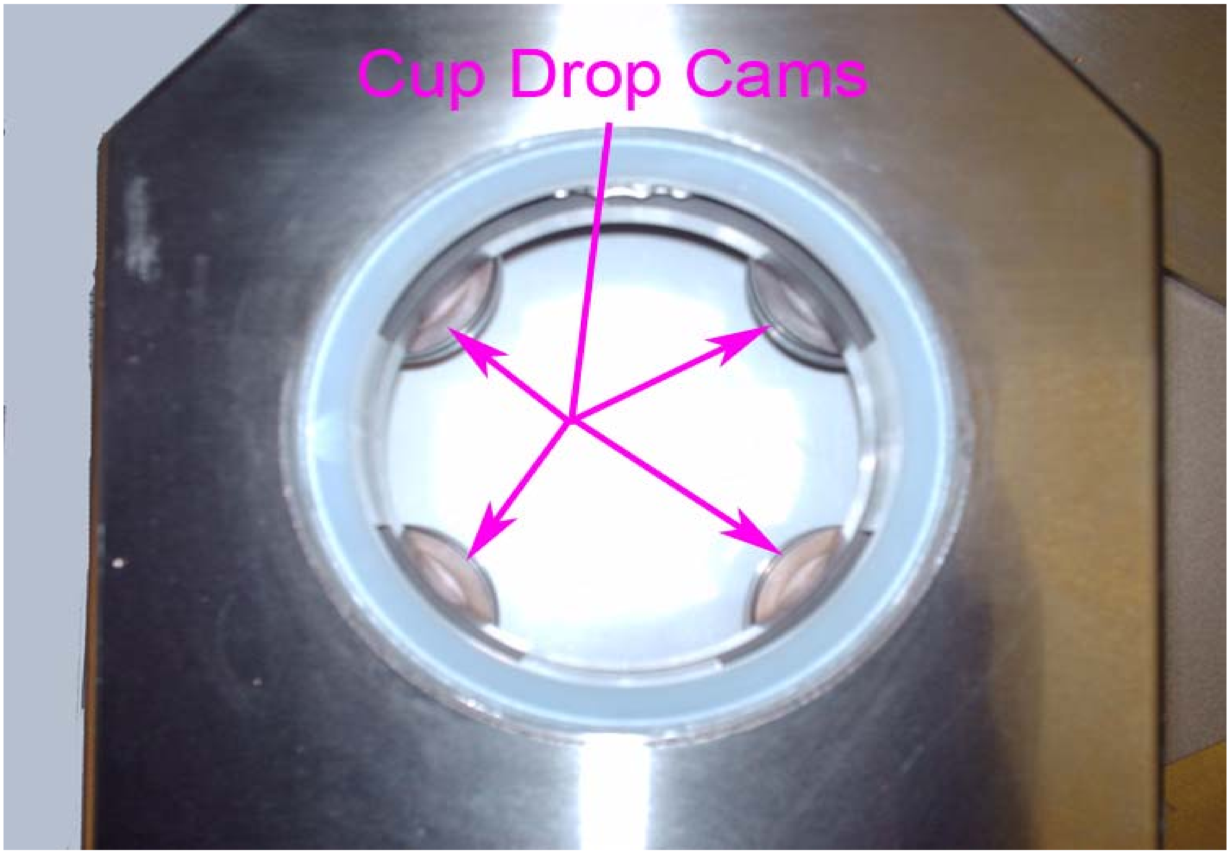
To begin adjustments, remove the cup accumulation cylinders from the top of the load station.
NOTE: The adjustment screws (Cup Drop Cams) are on one way bearings. (The screws only manually turn counter-clockwise and not clockwise).

To adjust the screws for proper cup loading, point the leading edge of the screw (start point of the groove) towards the center of the cup. Each screw should have its leading edge pointing at the center of the cup.

Place the cup in the adjusted screws and rotate the dial (using the dial jog feature on the control panel) and watch the cup drop cleanly into the hole in the dial. Note, the cup should be dropping level, if it is not level, then adjust individual screws until it is level. Confirm the sensor under the cup has activated. (Orange light indicated).

The cup should drop into the hole in the dial just after the table stops. There is a short window of opportunity for the machine to read if there is a cup. If the cup drops just before the dial plate starts moving again, the sensor under the cup drop may not read there is a cup until after the Allen Bradley Computer has alrea

Replace accumulation cylinders into housing.



Bill of Material - Manufactured

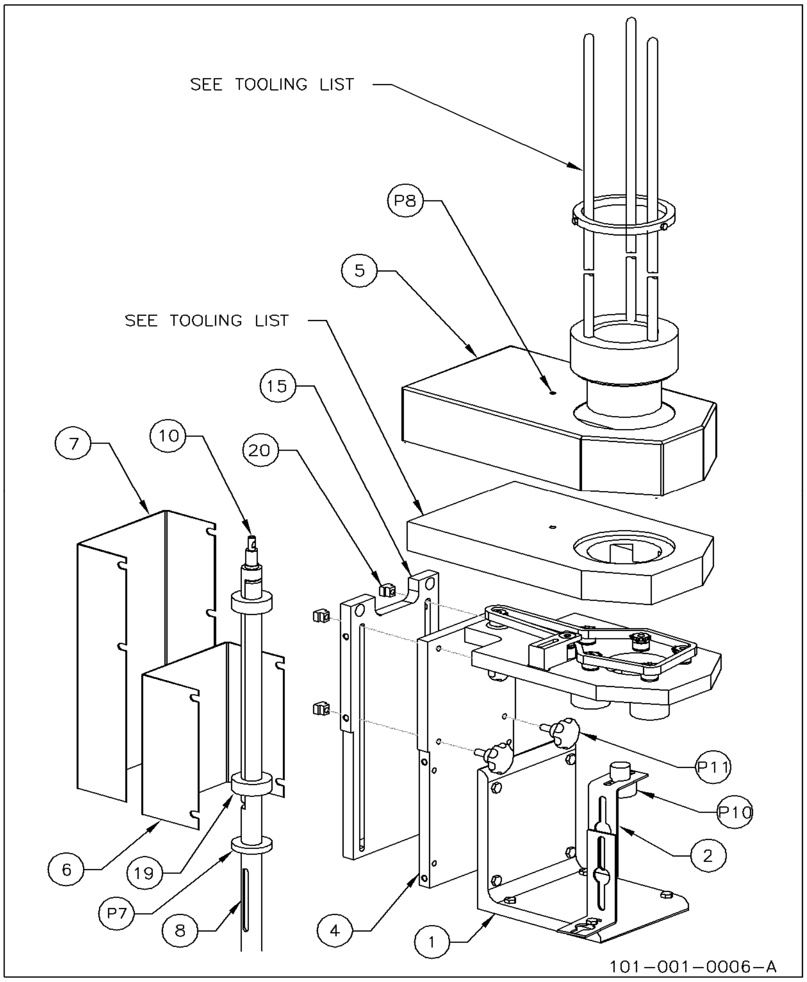
Assembly Part No.: **101-001-0006**

Unit Description: **Cup Load**

Model: **Single Lane Fixed - Small - Adjustable Height**

Release Date: **9/29/2009 0:00**

ITEM	QTY.	PART NO.	DESCRIPTION
1	1	001-0443	Angle Mount
2	2	001-0476	Sensor Bracket
3	4	001-0508	Cup Drop Screw
4	1	001-0516	Support Plate
5	1	001-0529	Guard
6	1	001-0532	Guard - Stationary
7	1	001-0533	Guard - Adjustable
8	1	001-0653	Shaft
9	1	001-0943	Tensioner Bracket
10	1	001-0944	Drive Shaft
11	4	001-0945	Drive Pin
12	1	001-0946	Idler Pin
13	1	001-0947	Tensioner Pin
14	7	001-0948	Sprocket
15	1	001-0949	Adjustment Plate
16	5	001-0951	Upper Spacer
17	4	001-0952	Lower Spacer
18	1	001-1550	Idler Spacer
19	3	001-1525	Guide Rod
20	2	001-1557	Collar
21	4	001-1600	T-Nut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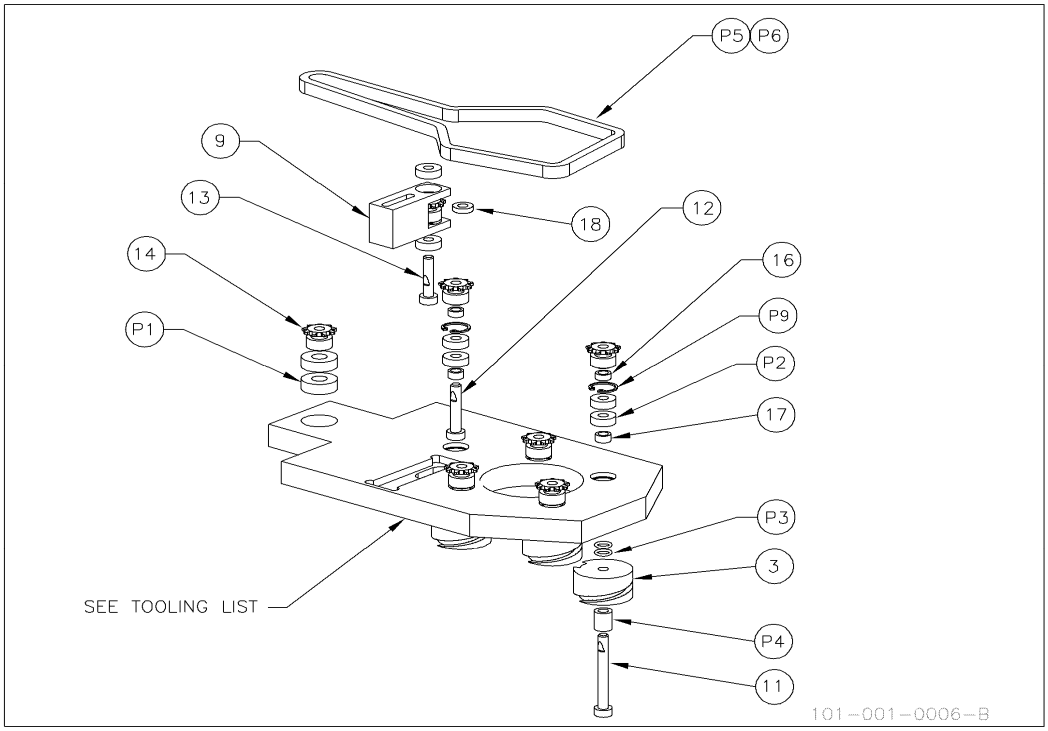
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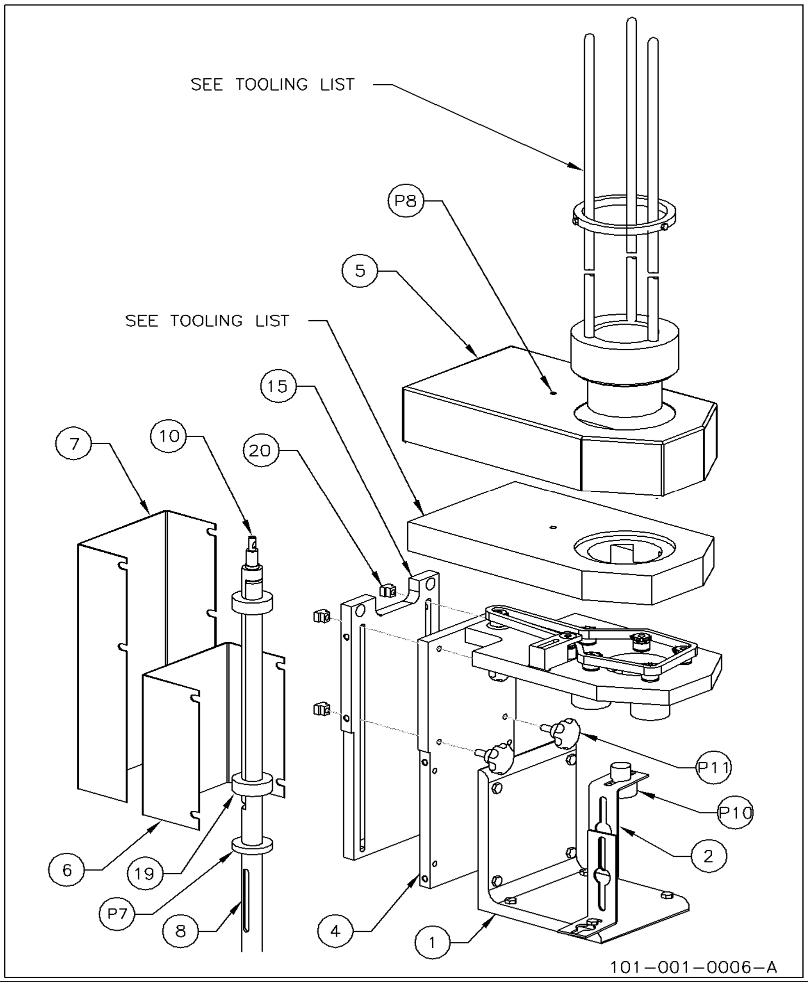
101-001-0006-B

Bill of Material - Purchased

Assembly Part No.:	**101-001-0005-A**
Unit Description:	**Cup Load**
Model:	**Single Lane Fixed - Small**
Release Date:	**9/29/2009 0:00**

ITEM	QTY.	PART NO.	DESCRIPTION
P1	2	P01-0005	Bearing
P2	12	P01-0006	Bearing
P3	8	P01-0015	O" Ring (010)
P4	4	P01-0021	Roller Clutch
P5	1	P01-0022	#25 Stn. Stl. Connector Link
P6	1	P01-0023	#25 Stn. Stl. Chain
P7	1	P01-0024	Seal
P8	1	P01-0028	Pan Head Screw
P9	5	P01-0029	Retaining Ring
P10	1	P01-0030	Sensor
P11	4	P01-0034	Star Grip Knob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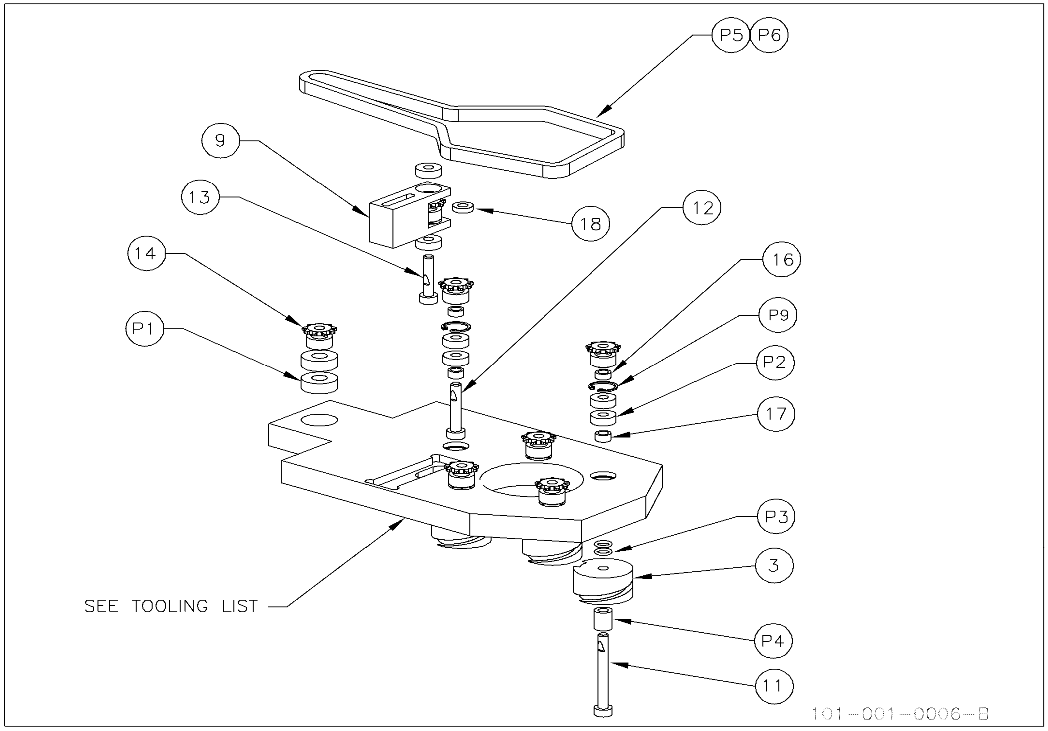
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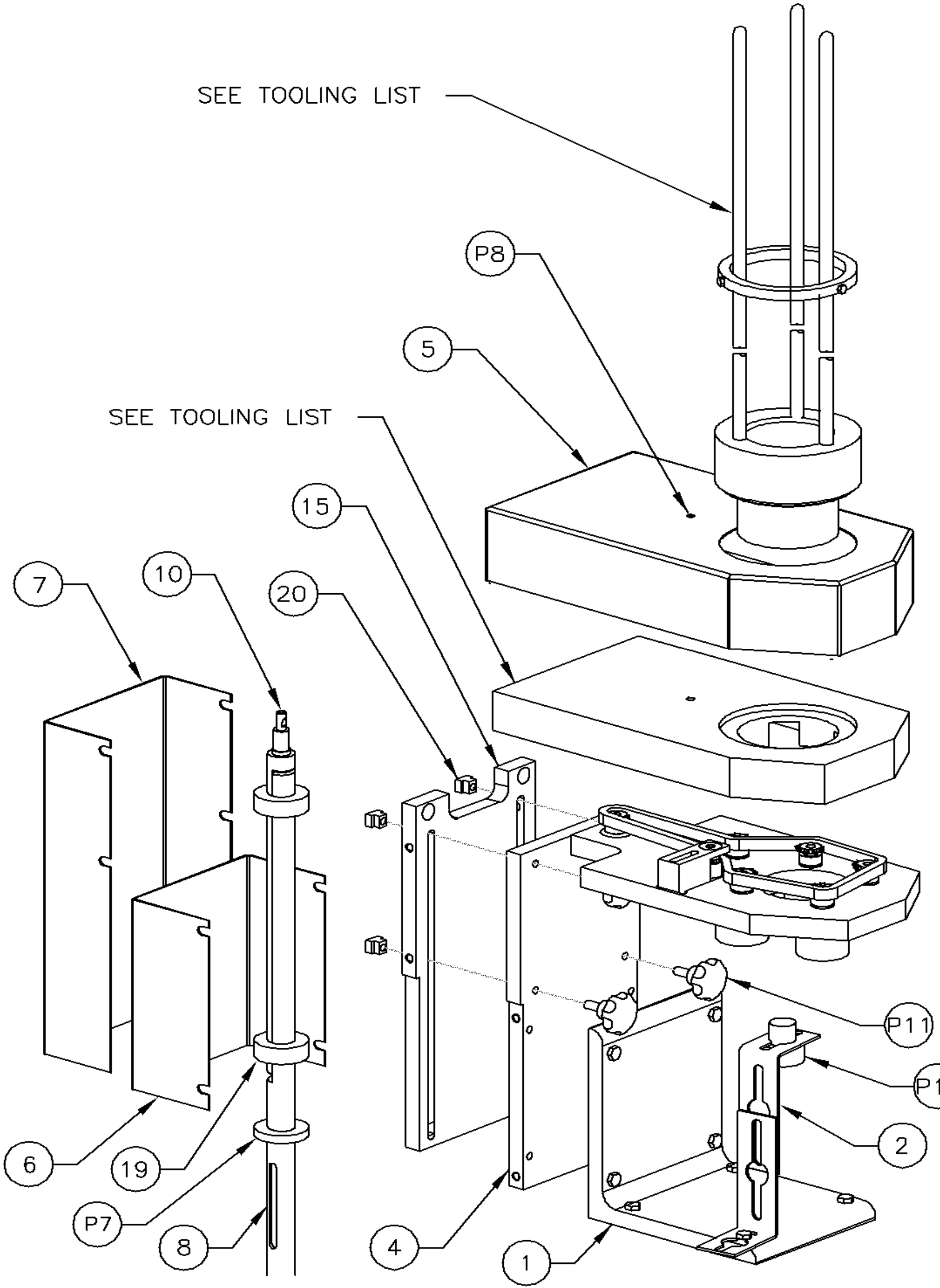
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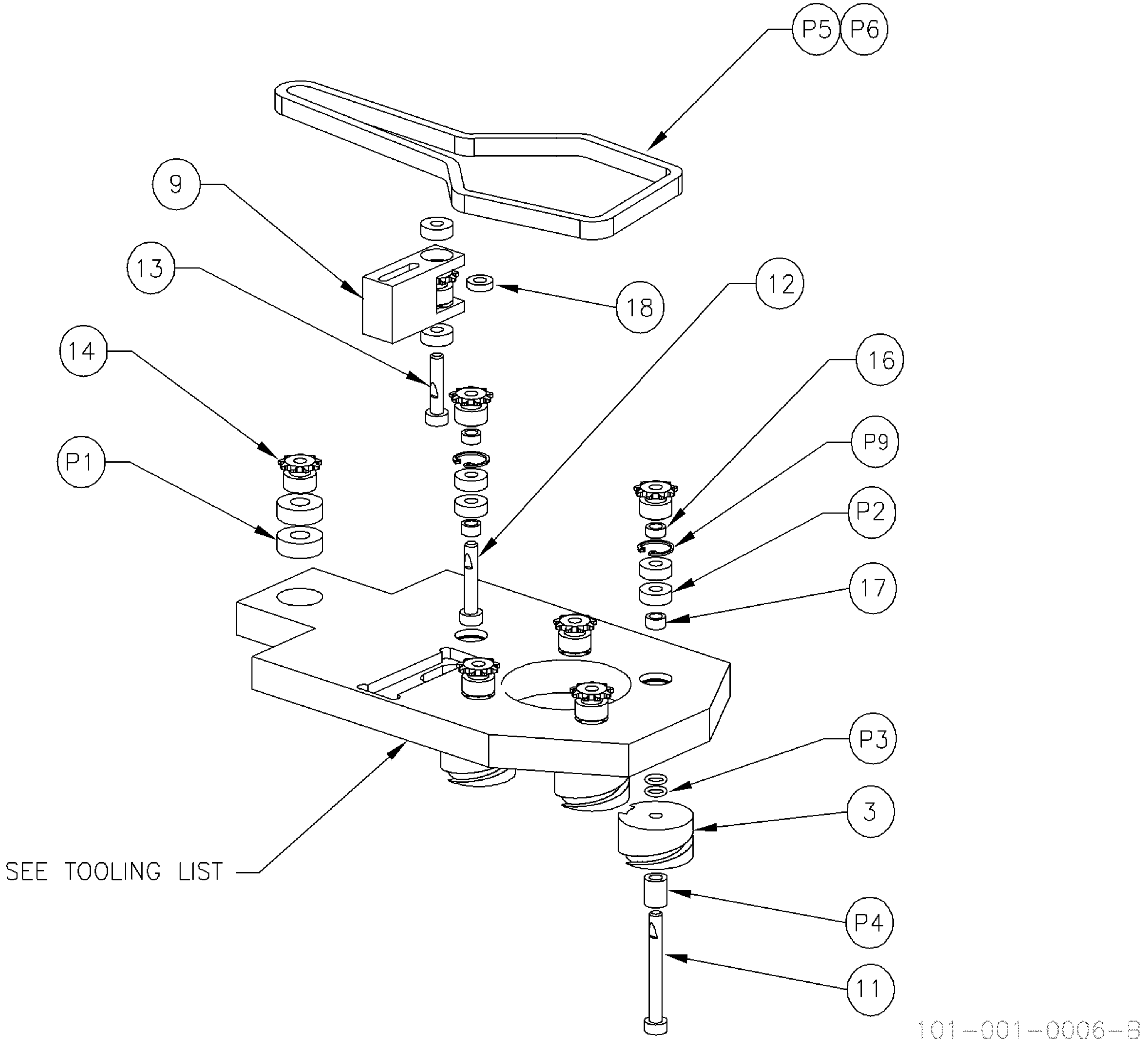
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101-001-0006-B

Bill of Material - Manufactured

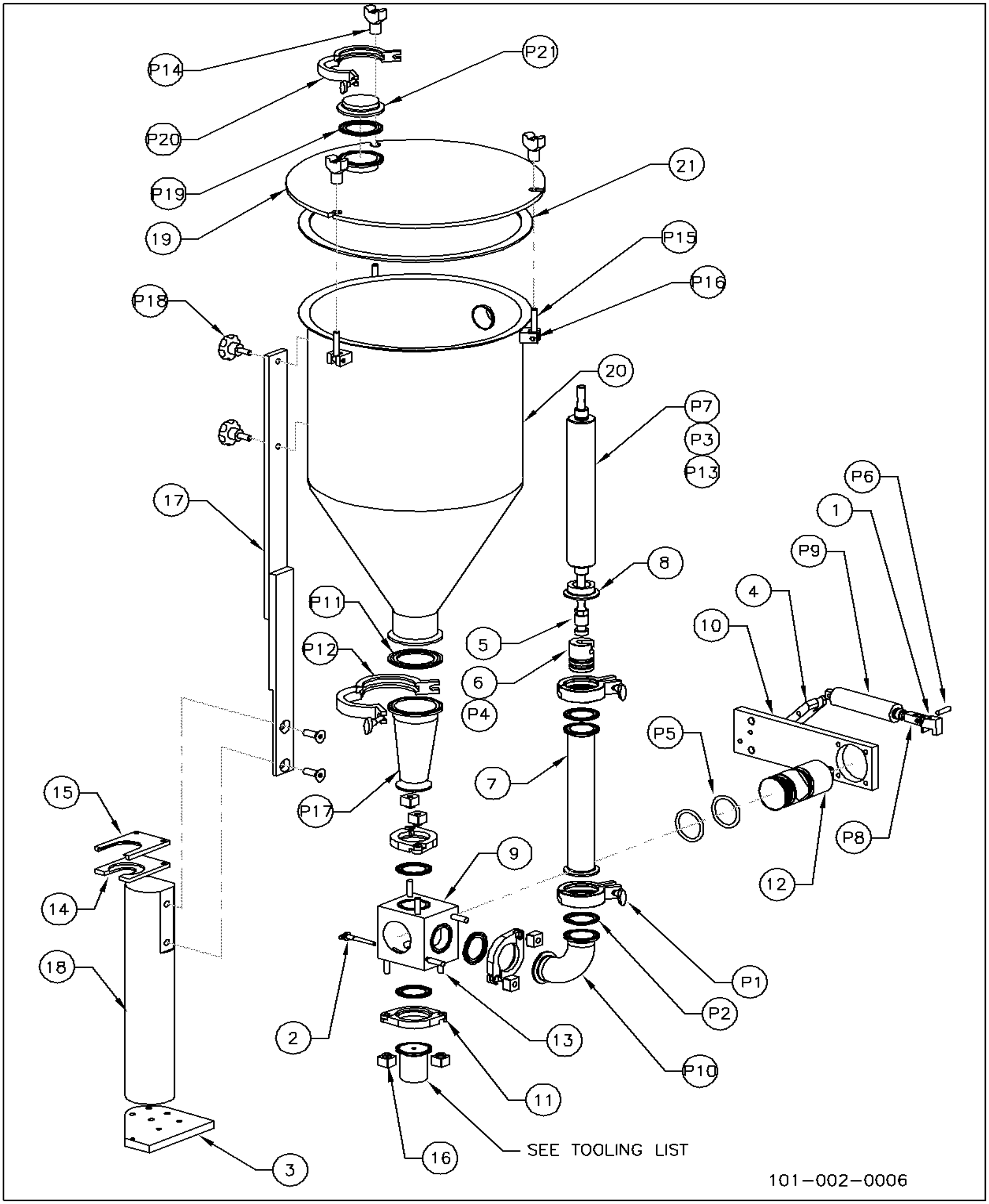
Assembly Part No.: **101-002-0006**

Unit Description: **Fill - .5- 4 Oz. Large Hopper**

Model: **Single Lane**

Release Date: **5/27/2010 0:00**

ITEM	QTY.	PART NO.	DESCRIPTION
1	1	002-0572	Pivot Clamp
2	1	002-0580	Retainer Pin
3	1	002-0969	Base
4	1	002-0971	Pivot Mount
5	1	002-0972	Coupler
6	1	002-0973	Piston
7	1	002-0974	Straight Tube
8	1	002-0975	Cylinder Flange
9	1	002-0980	Valve Housing
10	1	002-0981	Mounting Plate
11	6	002-0990	Clamp Half
12	1	002-0991	Valve Spool
13	6	002-0992	Stud
14	1	002-0993	Nest Bottom
15	1	002-0994	Nest Top
16	6	002-1007	Nut
17	1	002-1558	Hopper Support
18	1	002-1577	Column
19	1	002-1603	Lid
20	1	002-1604	Hopper
21	1	002-1438	Gasket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101-002-0006

Bill of Material - Purchased

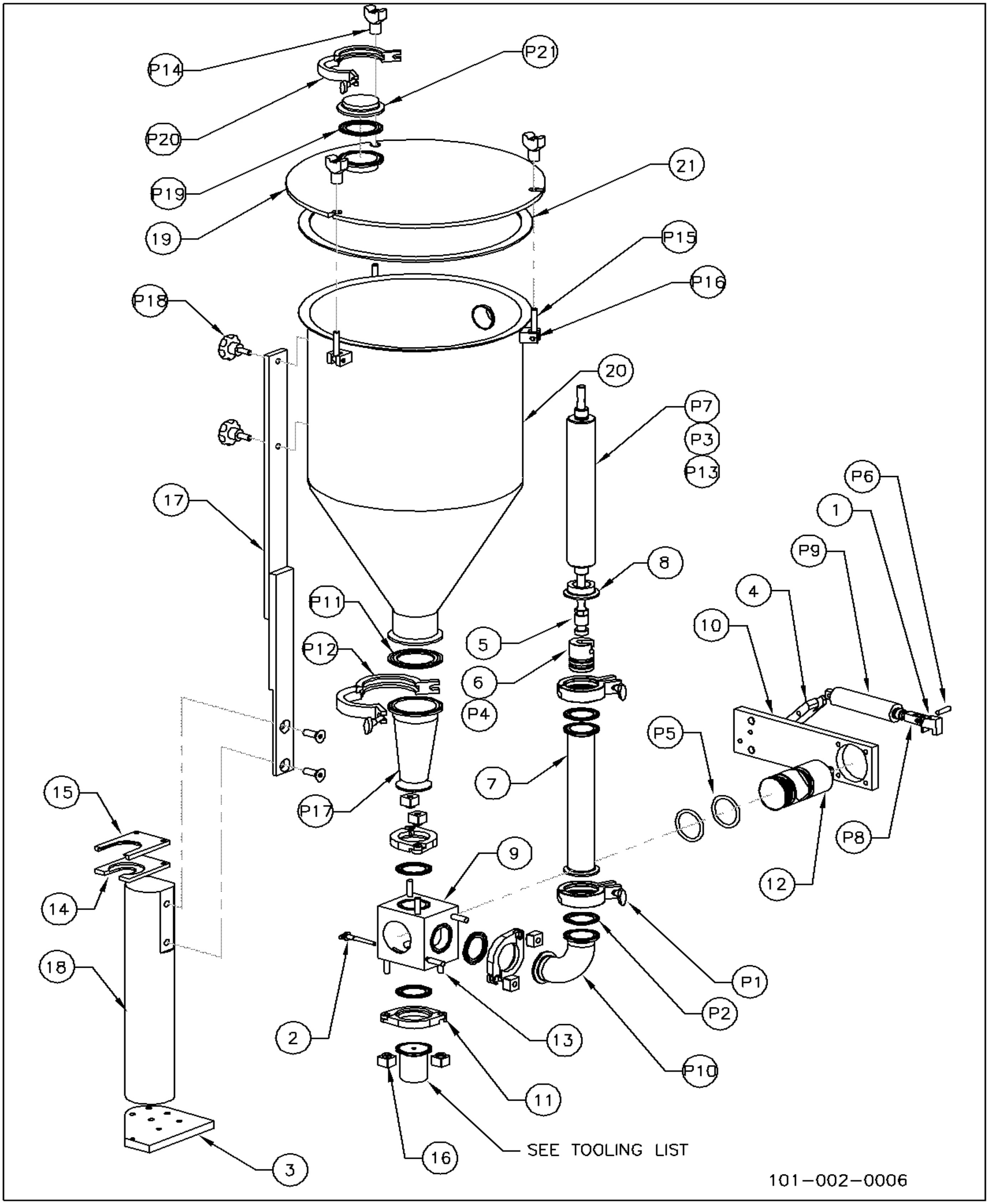
Assembly Part No.: **101-002-0006**

Unit Description: **Fill - .5- 4 Oz. Large Hopper**

Model: **Single Lane**

Release Date: **5/27/2010 0:00**

ITEM	QTY.	PART NO.	DESCRIPTION
P1	3	P02-0002	Clamp
P2	6	P02-0004	Gasket
P3	2	P02-0021	Cord Set
P4	2	P02-0029	"O" Ring
P5	2	P02-0030	"O" Ring
P6	1	P02-0031	Ball Grip Pin
P7	1	P02-0032	Air Cylinder
P8	1	P02-0033	Clevis
P9	1	P02-0034	Air Cylinder
P10	1	P02-0037	90d Elbow
P11	1	P02-0043	Gasket
P12	1	P02-0044	Clamp
P13	2	P02-0050	PNP Switch
P14	3	P02-0060	Serrated Wing Nut
P15	3	P02-0061	Eye Bolt
P16	3	P02-0066	Clevis Pin
P17	1	P02-0073	Eccentric 'Reducer
P18	2	P02-0074	Star Grip Knob
P19	1	P02-0076	Gasket
P20	1	P02-0077	Clamp - 2
P21	1	P02-0079	Solid End Cap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101-002-0006

Bill of Material - Manufactured

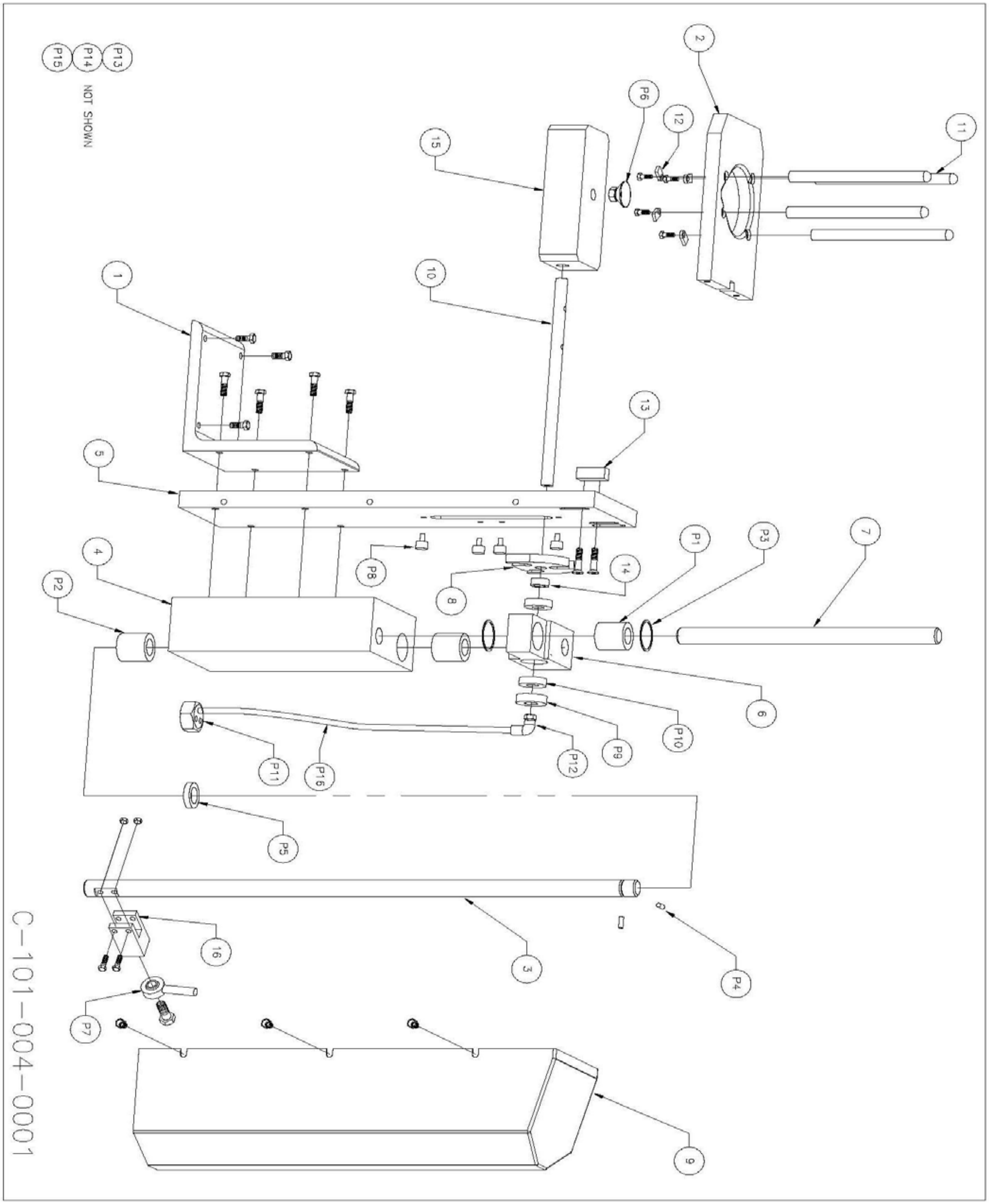
Assembly Part No.: **101-004-0001**

Unit Description: **Foil Place**

Model: **Single Lane - Small**

Release Date: **2/12/2003 0:00**

ITEM	QTY.	PART NO.	DESCRIPTION	
1	1	001-0443	Angle Mount	
2	1	004-0001	Foil Over Plate Blank	
3	1	004-0399	Shaft - Foil Place	
4	1	004-0441	Shaft Bearing Block	
5	1	004-0442	Vertical Mount	
6	1	004-0444	Lift Block	
7	1	004-0445	Guide Shaft	
8	1	004-0446	Rose Cam	
9	1	004-0531	Foil Place Guard	
10	1	004-0585	Foil Place Tube	
11	4	004-0587	Guide Rod	
12	4	004-0589	Eccentric	
13	1	004-0592	Key	
14	1	004-0593	Rose Cam Spacer	
15	1	004-0791	Vacuum Head	
16	1	004-0648	Clevis	
17	1	004-1552	Vacuum Fitting	used in place of P6 for some applications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C-101-004-0001

Bill of Material - Purchased

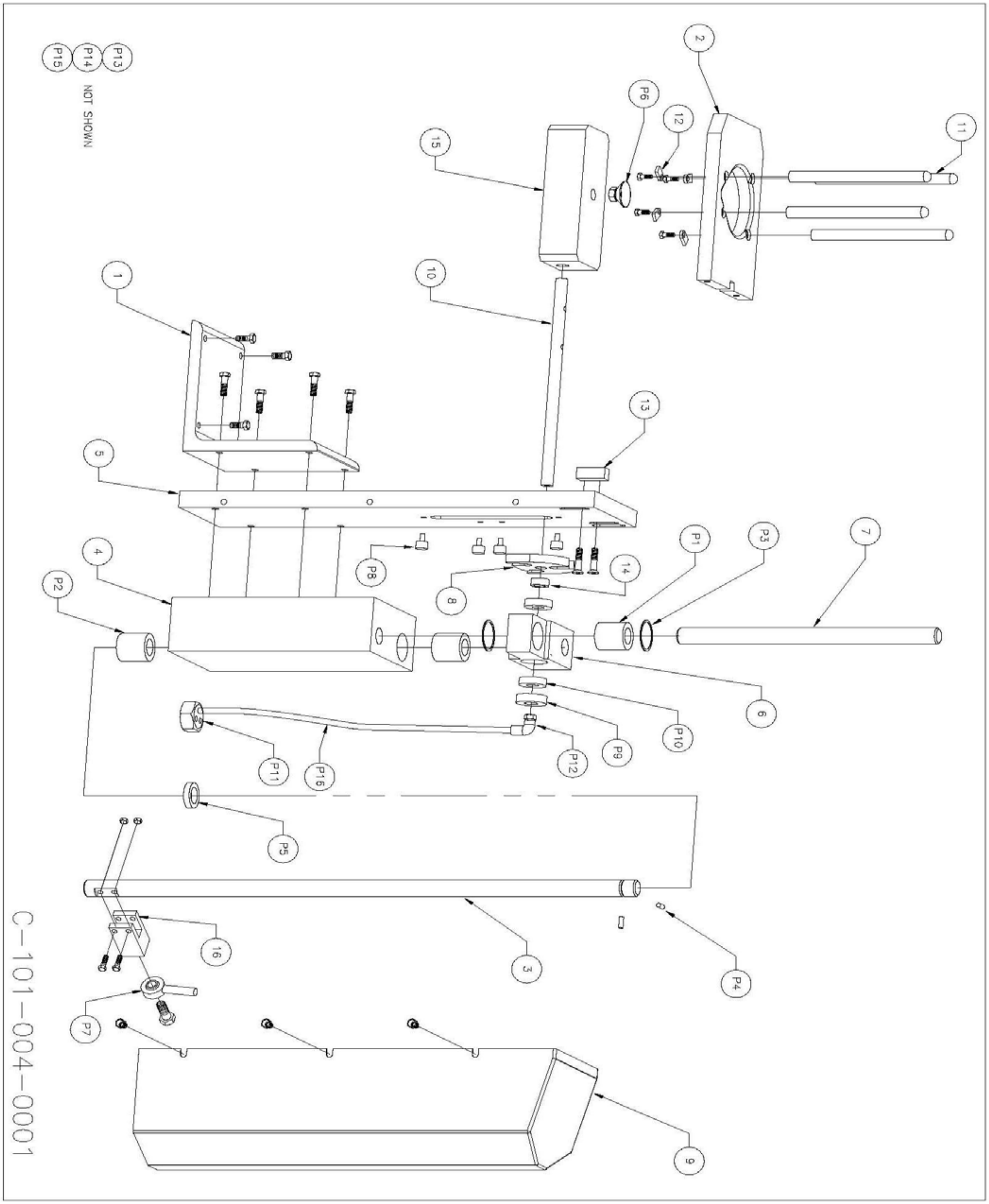
Assembly Part No.: **101-004-0003**

Unit Description: **Foil Place**

Model: **Single Lane - Small**

Release Date: **2/12/2003 0:00**

ITEM	QTY.	PART NO.	DESCRIPTION
P1	1	P00-0025	Linear Bearing
P2	2	P00-0026	Linear Bearing
P3	2	P00-0032	Retaining Ring
P4	2	P00-0035	Ball Plunger
P5	1	P01-0024	Seal
P6	1	P04-0001	Vacuum Cup
P7	1	P04-0003	Rod End
P8	4	P04-0004	Cam Follower
P9	1	P04-0005	Clamp Collar - ½"
P10	2	P04-0006	Bearing - ½"
P11	1	P04-0007	Cord Grip
P12	1	P04-0009	Rotary Elbow
P13	1	P04-0010	Vacuum Ejector
P14	1	P04-0013	Pressure Switch
P15	1	P04-0014	Branch Tee
P16	1	P04-0015	Recoil Tube


P13
P14
P15
NOT SHOWN
1
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3
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9
10
11
12
13
14
15
16
P1
P2
P3
P4
P5
P6
P7
P8
P9
P10
P11
P12
P16
C-101-004-0001

Bill of Material - Manufactured

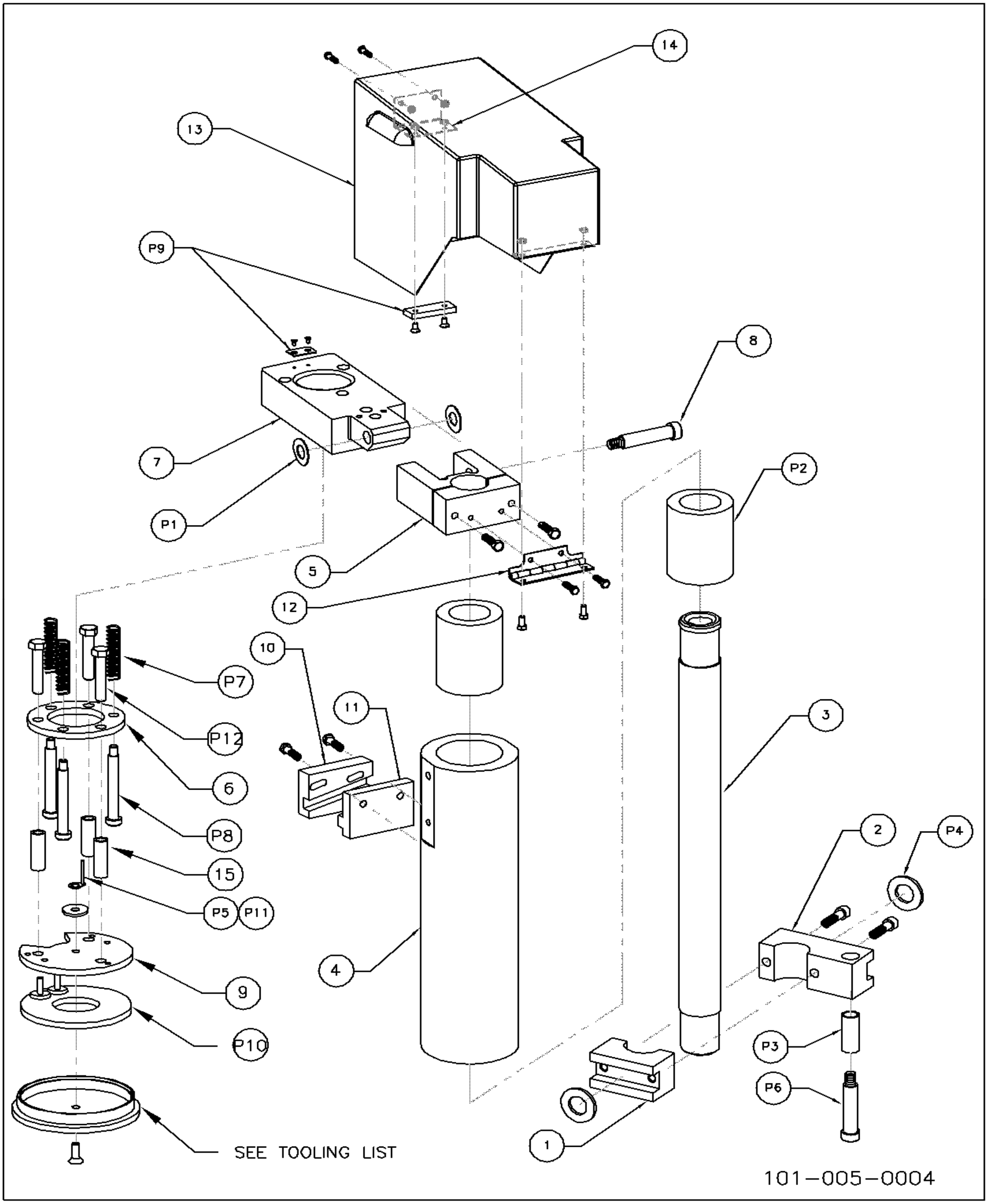
Assembly Part No.: **101-005-0004**

Unit Description: **Heat Seal**

Model: **Single Lane - Small**

Release Date: **5/27/2010 0:00**

ITEM	QTY.	PART NO.	DESCRIPTION
1	1	005-0424	Cam Yoke Half
2	1	005-0425	Cam Yoke Half
3	1	005-0426	Heat Seal Tube
4	1	005-0448	Main Support
5	1	005-0450	Pivot Plate Clamp
6	1	005-0452	Support Ring
7	1	005-0535	Heat Seal Plate
8	1	005-0563	Shoulder Bolt
9	1	005-1548	Heater Head
10	1	005-1555	Wear Block
11	1	005-1556	Wear Block
12	1	005-1571	Cover Hinge
13	1	005-1572	Guard
14	1	005-1575	Magnet Bracket
15	3	020-1459	Spacer


14
13
P9
8
7
P1
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12
P2
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P7
P12
6
3
P8
15
P5
P11
2
P4
4
9
P10
P3
P6
SEE TOOLING LIST
1
101–005–0004

Bill of Material - Purchased

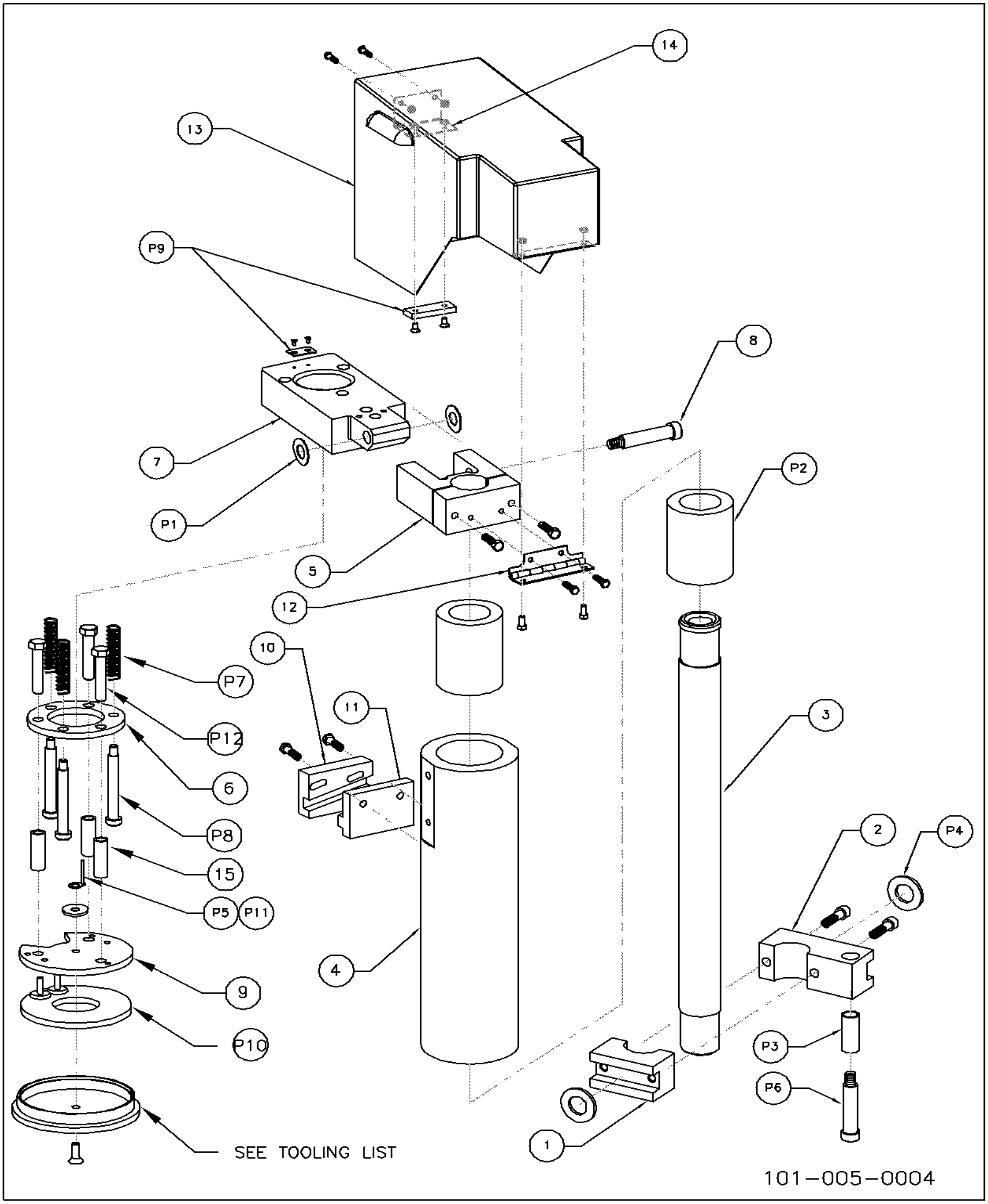
Assembly Part No.: **101-005-0004**

Unit Description: **Heat Seal**

Model: **Single Lane - Small**

Release Date: **5/27/2010 0:00**

ITEM	QTY.	PART NO.	DESCRIPTION
P1	2	P05-0003	Stn. Stl. Washer
P2	2	P05-0007	Linear Bearing
P3	1	P05-0008	Bushing
P4	2	P05-0009	Thrust Bearing
P5	1	P05-0011	Male Plug
P6	1	P05-0012	Shoulder Screw
P7	3	P05-0013	Compression Spring
P8	3	P05-0015	S.S.Shoulder Screw
P9	1	P05-0026	Magnetic Catch
P10	1	P05-0029	Heater (500w 240v)
P11	1	P05-0028	Thermal Couple
P12	3		S.S. Hex Head Cap Screw
Not Shown	7'	008-3HWL6	Thermocouple Lead Wire, Type J, Stranded 20AWG
Not Shown	1	P05-0011	Male Plug for Thermocouple
Not Shown	1	P05-0031	Female Plug for Thermocouple


14
13
P9
8
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P1
P2
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12
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P7
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3
P12
6
P8
2
P4
15
P5
P11
9
4
P10
P3
P6
SEE TOOLING LIST
1
101–005–0004

Bill of Material - Manufactured

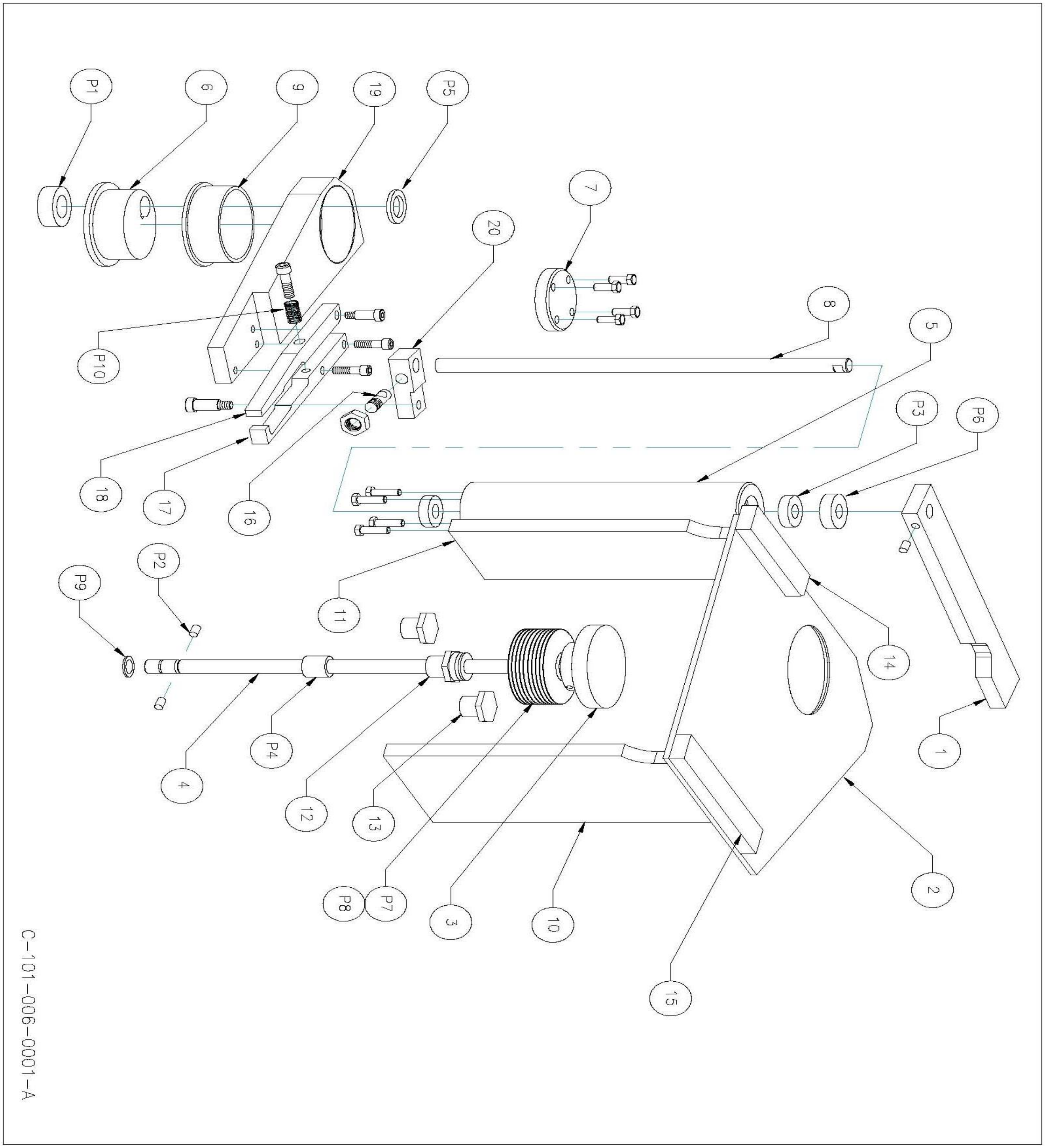
Assembly Part No.: **101-006-0001-A**

Unit Description: **Unload w/Boot**

Model: **Single Lane - Small**

Release Date: **9/18/2005 0:00**

ITEM	QTY.	PART NO.	DESCRIPTION
1	1		See tooling pack
2	1		See tooling pack
3	1		See tooling pack
4	1	006-0439	Lift Shaft
5	1	006-0447	Pivot Column
6	1	006-0506	Eccentric Hub
7	1	006-0596	Lidder Cover Plate
8	1	006-0603	Pivot Shaft
9	1	006-0920	Bearing
10	1	006-0964	Riser
11	1	006-0965	Riser
12	1	006-0985	Boot Fitting
13	2	006-0986	Plug
14	1	006-0988	Cover
15	1	006-0989	Cover
16	1	006-1123	Clinch Screw
17	1	006-1124	Drive Bar
18	1	006-1125	Spring Bar
19	1	006-1126	Crank Arm
20	1	006-1127	Lever


P1
P5
P10
P3
P6
P2
P9
P4
P8
P7
C-101-006-0001-A

Bill of Material - Purchased

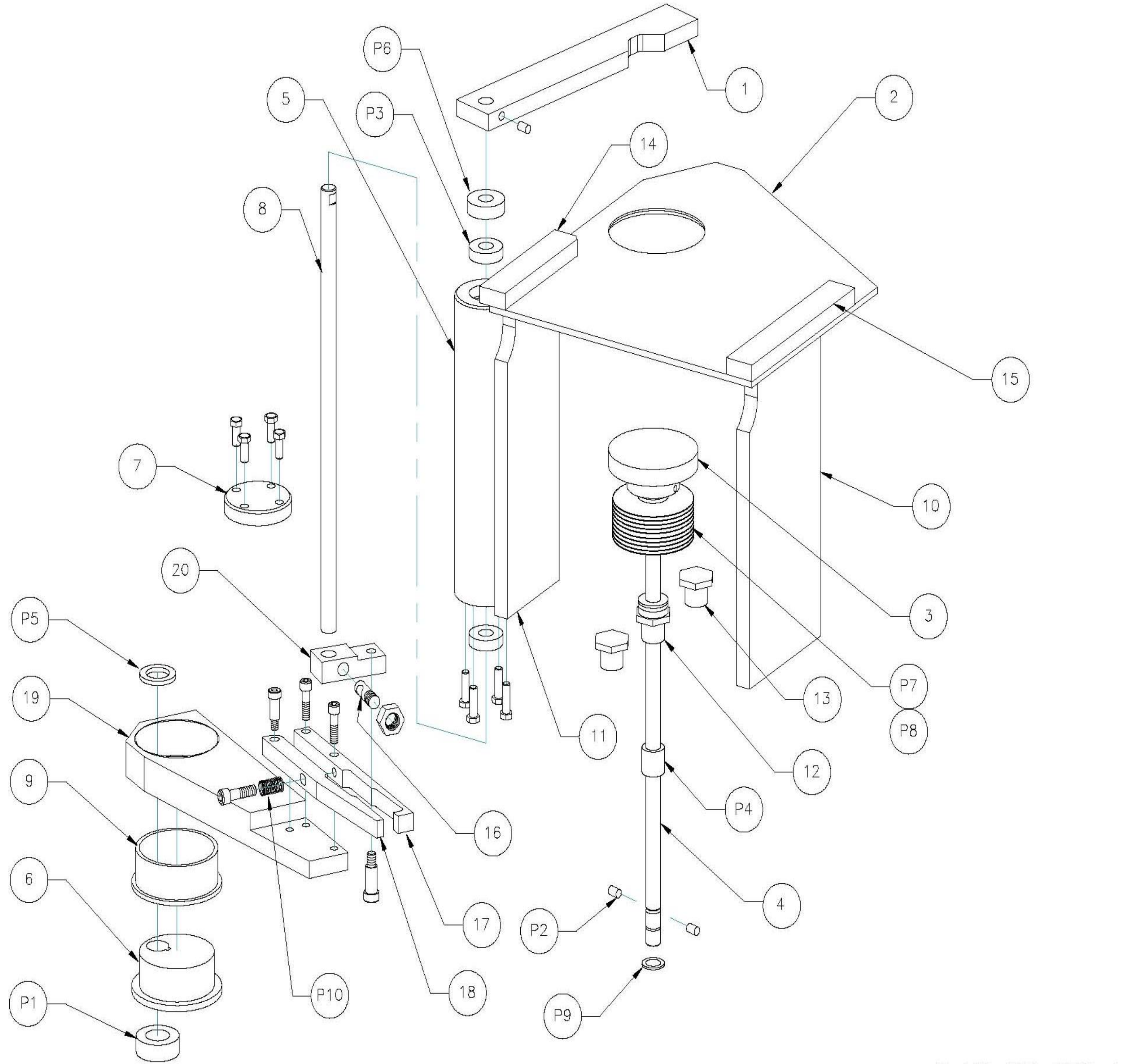
Assembly Part No.: **101-006-0001-A**

Unit Description: **Unload w/Boot**

Model: **Single Lane - Small**

Release Date: **9/18/2005 0:00**

ITEM	QTY.	PART NO.	DESCRIPTION
P1	1	P00-0004	Clamp Collar
P2	2	P00-0035	Ball Plunger
P3	2	P04-0006	Bearing - ½"
P4	1	P06-0004	Sleeve Bearing
P5	1	P06-0005	Sleeve Bearing
P6	1	P06-0006	Thrust Bearing
PA	1	P06-0007	Clamp Collar
P7	2	P06-0008	Spring Clamp
P8	1	P06-0009	Bellows
P9	1	P06-0010	Retaining Ring
P10	1	P06-0011	Lee Spring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P3
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P8
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P4
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6
4
17
P2
P1
P10
18
P9

C-101-006-0001-A

Bill of Material - Manufactured

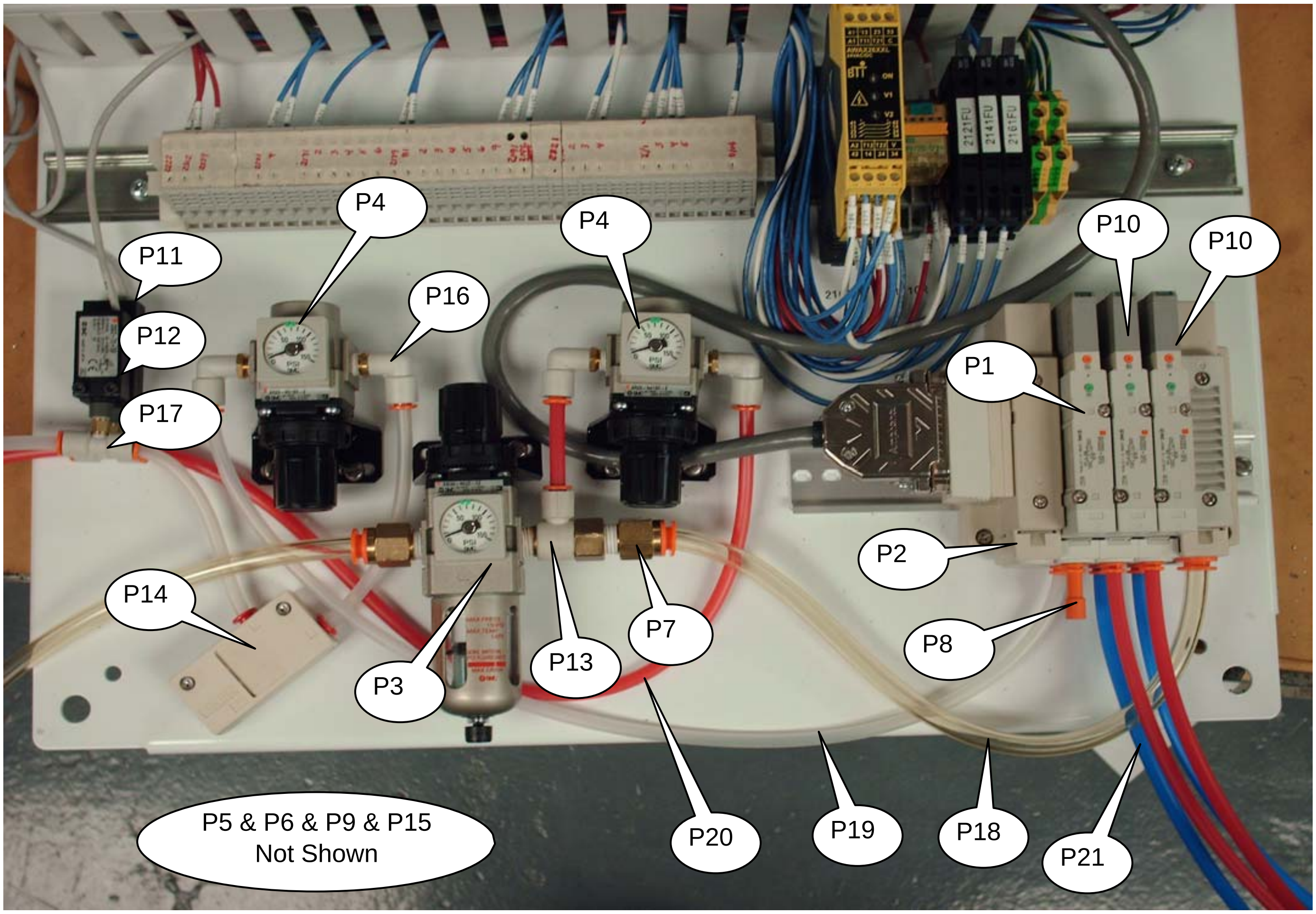
Assembly Part No.: 101-008-0005

Unit Description: Electrical Pnuematic

Model: Single Lane - Small

Release Date:

ITEM	QTY.	PART NO.	DESCRIPTION	MATERIAL	FINISH SIZE


P4
P4
P11
P16
P10
P10
P12
P1
P17
P2
P14
P7
P8
P13
P3
P5 & P6 & P9 & P15 Not Shown
P20
P19
P18
P21

Bill of Material - Purchased

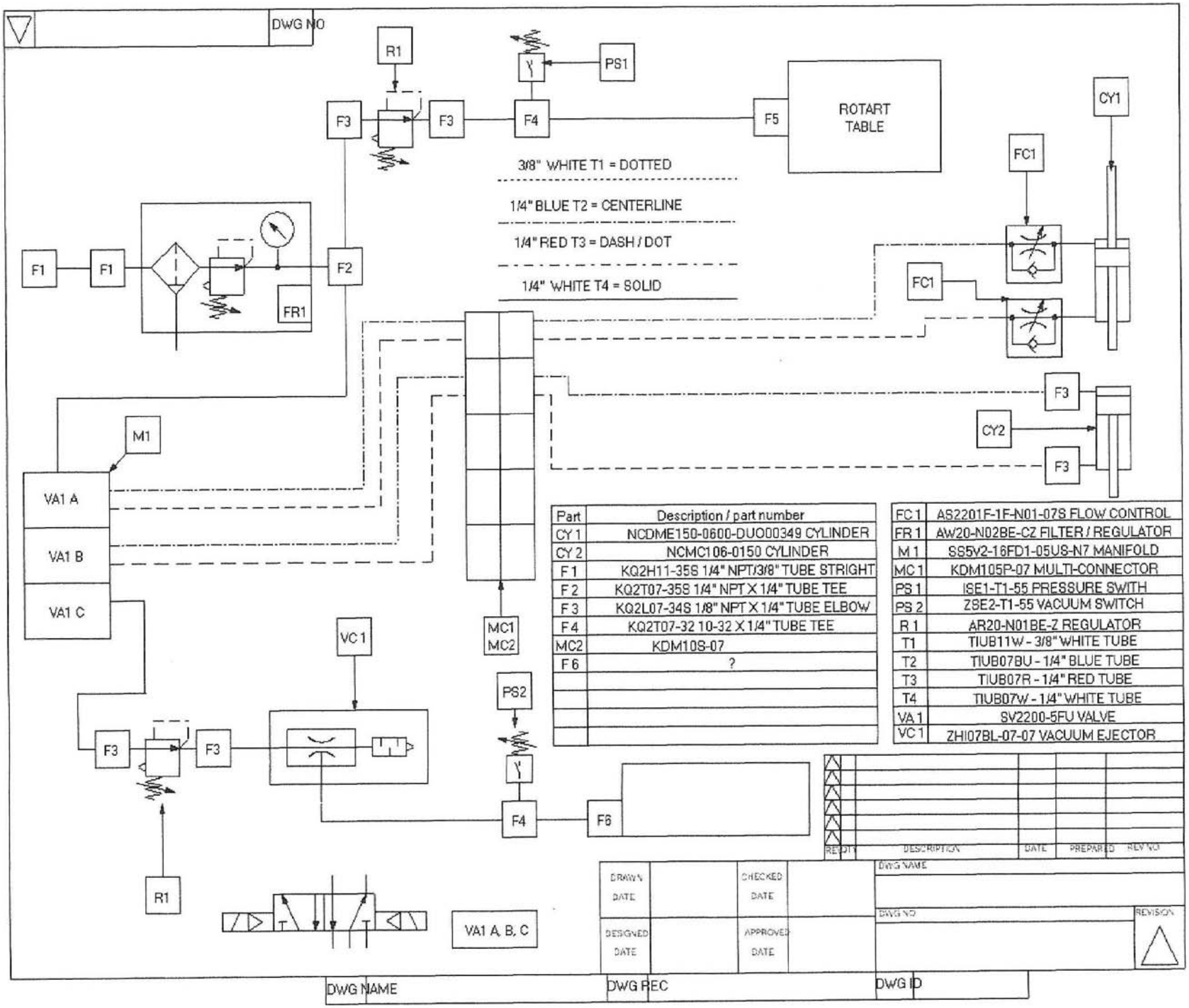
Assembly Part No.: **101-008-0005**

Unit Description: **Electrical Pnuematic**

Model: **Single Lane - Small**

Release Date:

ITEM	QTY.	PART NO.	DESCRIPTION	
P1	1	P08-0001	Valve	
P2	1	P08-0002	Manifold	
P3	1	P08-0003	Filter/Regulator	
P4	2	P08-0004	Regulator/Guage	
P5	1	P08-0005	Multi Connector - Male	Not Shown
P6	1	P08-0006	Multi Connector - Female	Not Shown
P7	3	P08-0008	Fitting - Straight 1/4 x 3/8	
P8	7	P08-0012	Plug	
P9	1	P08-0013	Bulkhead Adapter	Not Shown
P10	2	P08-0061	Filler Valve	
P11	1	P00-0052	Table Detent Pressure Switch	
P12	1	P04-0013	Foil Place Pressure Switch	
P13	1	P08-0060	Fitting - Univ Female Elbow	
P14	1	P04-0010	Vacuum Ejector	
P15	1	P08-0064	Quick Disconnect Coupling	Not Shown
P16	4	P04-0012	Fitting Male Elbow	
P17	2	P04-0014	Branch Tee	
P18	2	P08-0062	1/2" Poly tubing	
P19	N/A	P08-0052	1/4" Poly White Tubing	
P20	N/A	P08-0053	1/4" Poly Red Tubing	
P21	N/A	P08-0054	1/4" Poly Blue Tubing	


DWG NO
R1
PS1
F3
F3
F4
F5
ROTART TABLE
CY1
FC1
FC1
F1
F1
FR1
F2
M1
VA1 A
VA1 B
VA1 C
F3
CY2
F3
MC1
MC2
VC 1
PS2
F3
F3
F4
F6
R1
VA1 A, B, C
REV/QTY
DESCRIPTION
DATE
PREPARED
REV NO
DRAWN
DATE
CHECKED
DATE
DESIGNED
DATE
APPROVED
DATE
DWG NAME
DWG NO
REVISION
DWG NAME
DWG REC
DWG ID

3/8" WHITE T1 = DOTTED

1/4" BLUE T2 = CENTERLINE

1/4" RED T3 = DASH / DOT

1/4" WHITE T4 = SOLID

Part	Description / part number
CY 1	NCDME150-0600-DUO00349 CYLINDER
CY 2	NCMC106-0150 CYLINDER
F 1	KQ2H11-35S 1/4" NPT/3/8" TUBE STRIGHT
F 2	KQ2T07-35S 1/4" NPT X 1/4" TUBE TEE
F 3	KQ2L07-34S 1/8" NPT X 1/4" TUBE ELBOW
F 4	KQ2T07-32 10-32 X 1/4" TUBE TEE
MC2	KDM10S-07
F 6	?

FC 1	AS2201F-1F-N01-07S FLOW CONTROL
FR 1	AW20-N02BE-CZ FILTER / REGULATOR
M 1	SS5V2-16FD1-05US-N7 MANIFOLD
MC 1	KDM105P-07 MULTI-CONNECTOR
PS 1	ISE1-T1-55 PRESSURE SWITH
PS 2	ZSE2-T1-55 VACUUM SWITCH
R 1	AR20-N01BE-Z REGULATOR
T1	TIUB11W - 3/8" WHITE TUBE
T2	TIUB07BU - 1/4" BLUE TUBE
T3	TIUB07R - 1/4" RED TUBE
T4	TIUB07W - 1/4" WHITE TUBE
VA 1	SV2200-5FU VALVE
VC 1	ZHI07BL-07-07 VACUUM EJECTOR

Bill of Material - Manufactured

Assembly Part No.: **101-009-2950**

Unit Description: **Tooling Pack**

Model: **Single Lane -Small**

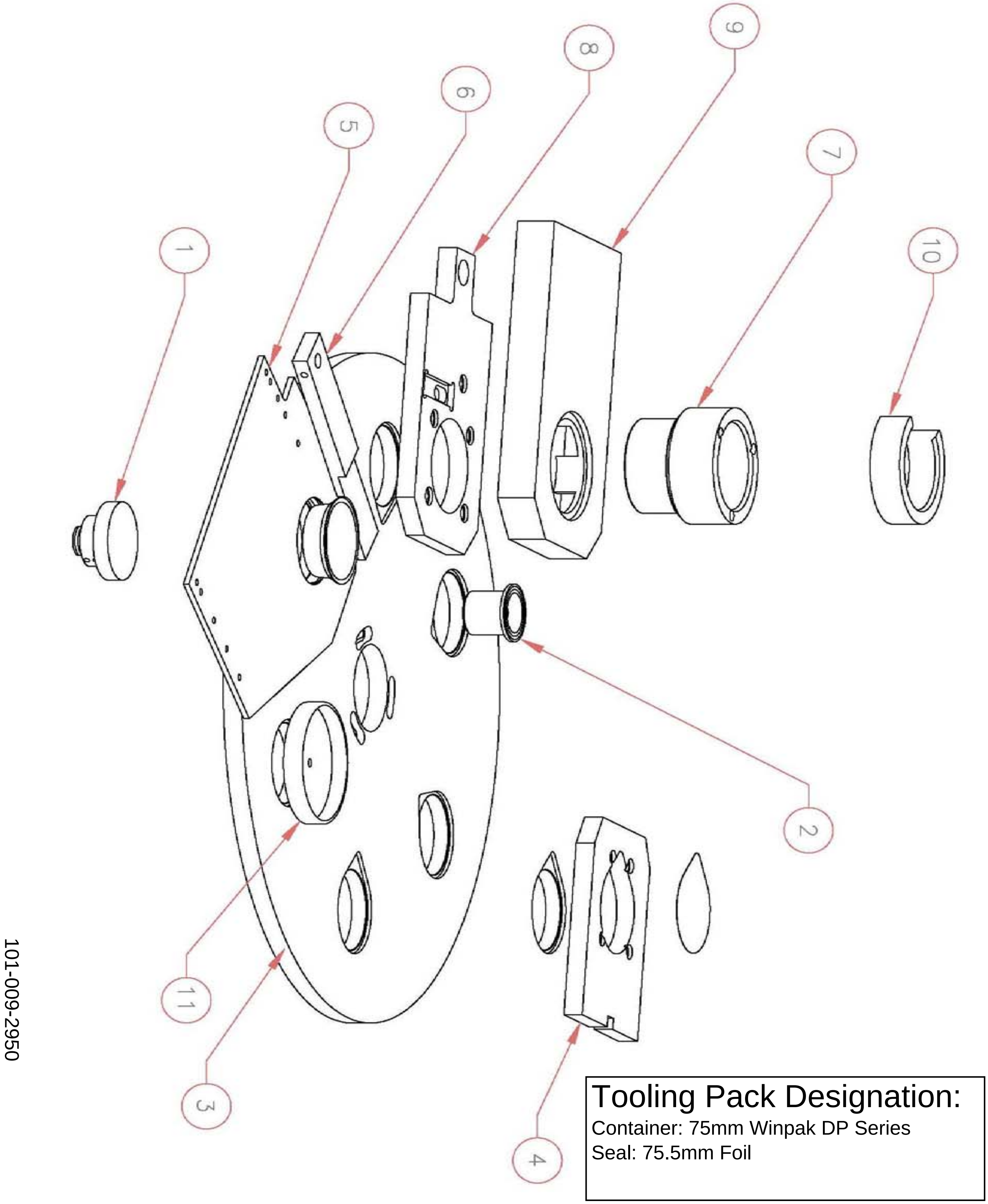
Release Date: **8/14/2009 0:00**

ITEM	QTY.	PART NO.	DESCRIPTION
1	1	009-1511	Unload Puck
2	1	009-1516	Ferrule
3	1	009-1520	Dial Plate
4	1	009-1521	Foil Over Plate
5	1	009-1522	Unload Shelf
6	1	009-1523	Sweep Arm
7	1	009-1524	Cup Drop Sleeve
8	1	009-1526	Cup Drop Plate
9	1	009-1527	Cup Drop Cover
10	1	009-1529	Cup Drop Ring
11	1	009-1530	Heat Seal Ring
12	1	009-1533	Setting Ring
13	1	009-1535	Camco Indexer Wrench

Tooling Pack Designation:

Container: 75 mm Winpak DP Series

Seal: 75.5 mm Foil


1
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6
8
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7
10
2
11
3
4
101-009-2950

Tooling Pack Designation:

Container: 75mm Winpak DP Series
Seal: 75.5mm Foil

Bill of Material - Manufactured

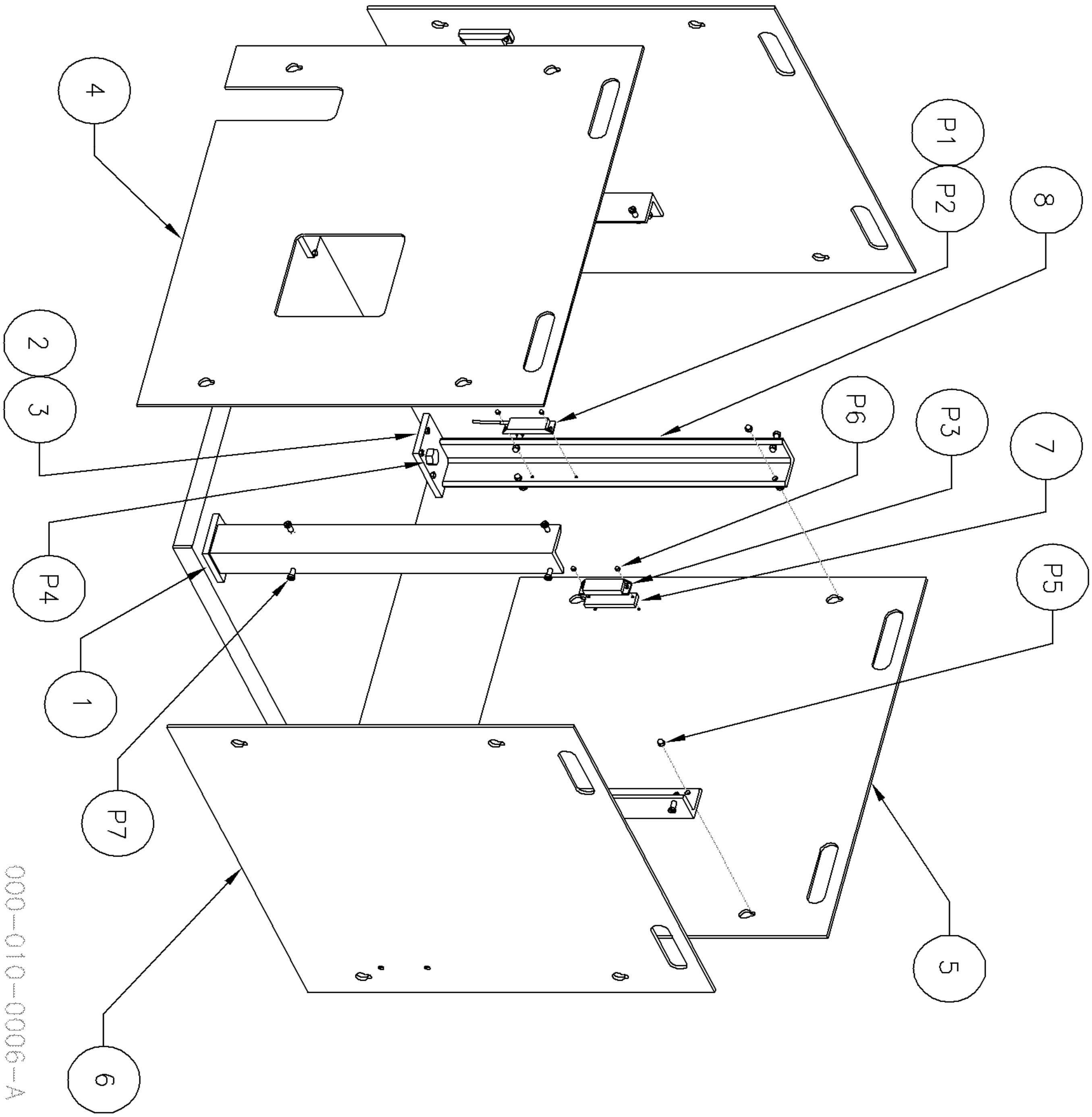
Assembly Part No.: **000-010-0006-A**

Unit Description: **Perimeter Guard**

Model: **Universal**

Release Date: **5/28/2010 0:00**

ITEM	QTY.	PART NO.	DESCRIPTION
1	2	010-1541	Guard Bracket Plate
2	1	010-1542	Guard Bracket Plate
3	1	010-1543	Guard Bracket Plate
4	1	010-1573	Rear Guard
5	1	010-1545	Front Guard
6	2	010-1546	Side Guard
7	4	010-1547	Spacer
8	4	010-1549	Guard Bracket


4
2
3
P1
P2
8
P6
P3
7
P4
1
P5
P7
6
5
000-010-0006-A

Bill of Material - Purchased

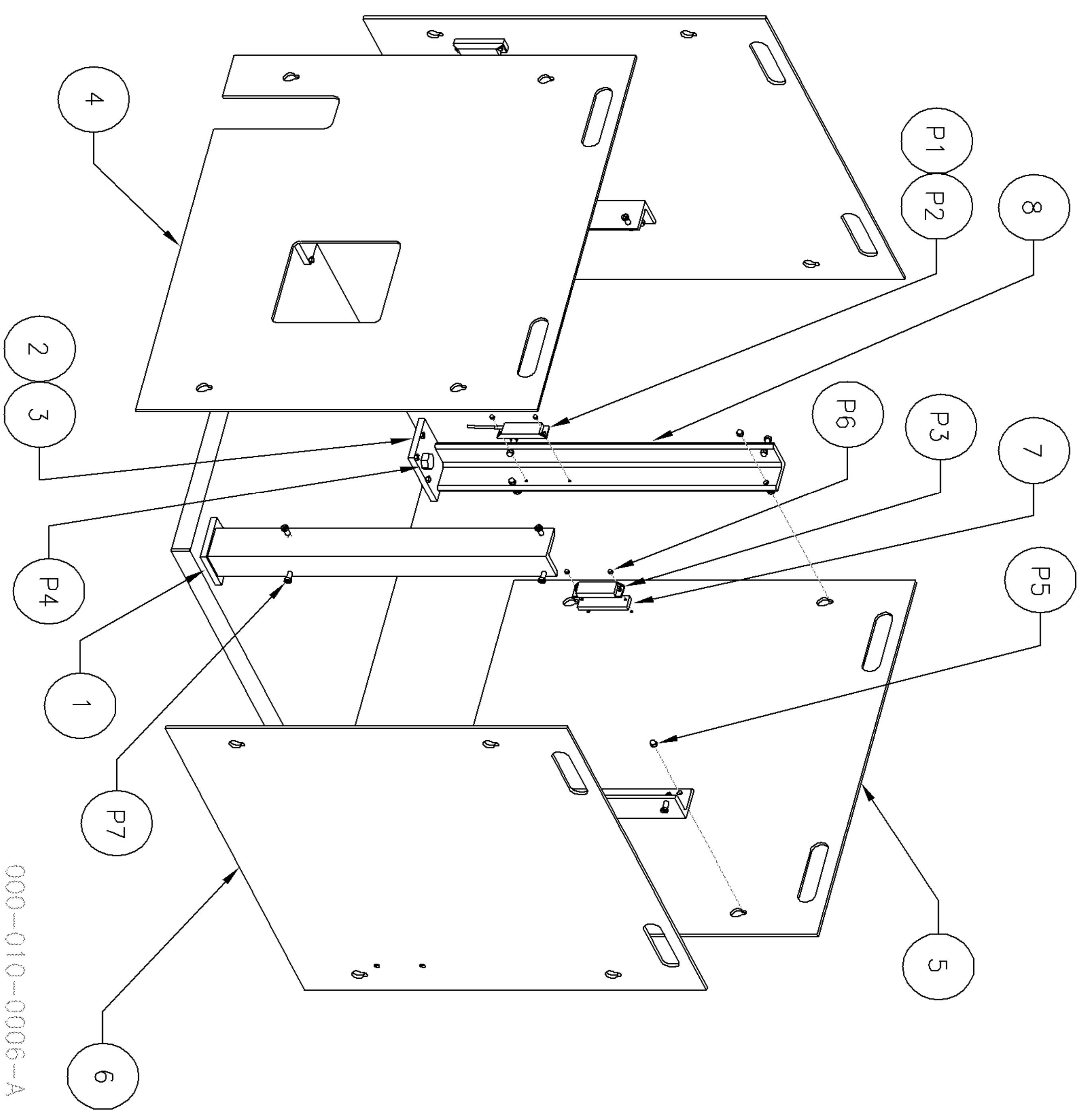
Assembly Part No.: **000-010-0006-A**

Unit Description: **Perimeter Guard**

Model: **Universal**

Release Date: **5/28/2010 0:00**

ITEM	QTY.	PART NO.	DESCRIPTION
P1	1	P10-0018	Magnetic Switch Controller AWAX 26XXL
P2	4	P10-0019	Magnetic Switch MAK-4256-3
P3	4	P10-0020	Magnetic Switch Sensor TK42-CD/2
P4	4	P10-0021	Cord Grip
P5	16	P10-0022	Acorn Nut 1/4-20
P6	16	P10-0023	Acorn Nut #8-32
P7	16	P10-0024	Slotted Shoulder Screw 5/16 x 1/2 lg.


4
2
3
P4
1
P7
6
P1
P2
8
P6
P3
7
P5
5
000-010-0006-A

Gearing and Lubricating Machine

Sanitary Petrol-Gel Lubricant, Packaged by:

McGaughlin Oil Co.
3750 E. Livingston Ave.
Columbus, Ohio
43227-2246

Using grease zerk, Lubricate bearings every 400 hours. NOTE: ***There are four (4) grease zerks. These zerks are indicated by a green star in sections 4 and 5.***

Lubricate Camco indexer, as per, Camco with Mobil SHC 634.

NOTE: Manually apply machine lube on surfaces indicated by gold star in sections 4, 5 and 6.

Apendix A

Electrical.

W101-101
101-119-2950
WILPACK PACKAGING
ELECTRICAL SCHEMATICS

PAGE	DESCRIPTION
1	TITLE PAGE
2	POWER DISTRIBUTION
3	PLC INPUTS
4	PLC OUTPUTS

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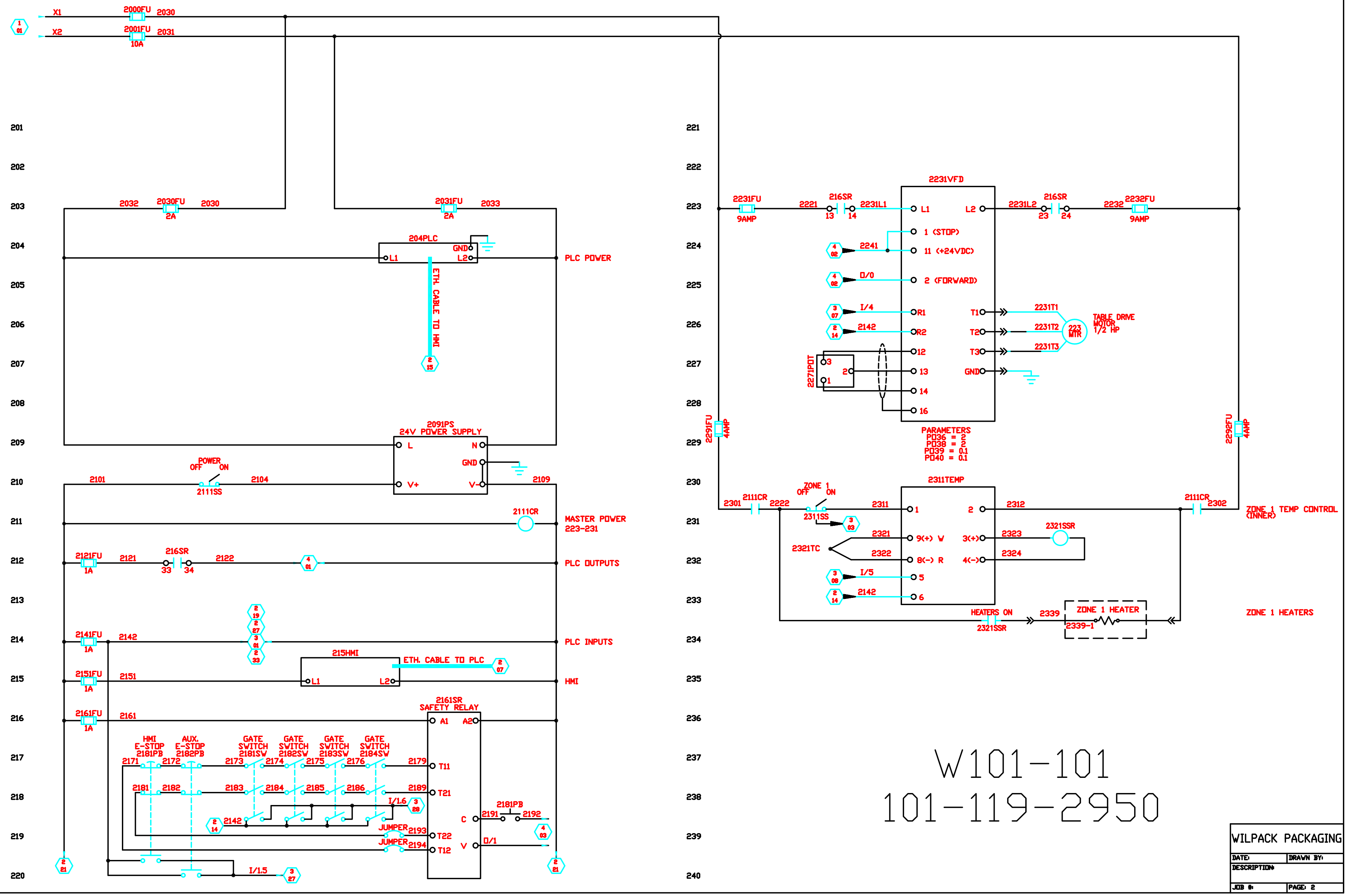
DESCRIPTION:	
JOB #:	PAGE: 1


X1
X2
2000FU
2030
2001FU
10A
2031
201
202
203
2032
2030FU
2A
2030
2031FU
2A
2033
204
204PLC
GND
L1
L2
PLC POWER
205
ETH. CABLE TO HMI
206
207
208
209
2091PS
24V POWER SUPPLY
L
N
GND
V+
V-
210
2101
POWER
OFF ON
2111SS
2104
2109
211
2111CR
MASTER POWER
223-231
212
2121FU
1A
2121
216SR
33
34
2122
PLC OUTPUTS
213
214
2141FU
1A
2142
PLC INPUTS
215
2151FU
1A
2151
215HMI
L1
L2
ETH. CABLE TO PLC
HMI
216
2161FU
1A
2161
2161SR
SAFETY RELAY
A1
A2
217
HMI E-STOP 2181PB
AUX. E-STOP 2182PB
GATE SWITCH 2181SW
GATE SWITCH 2182SW
GATE SWITCH 2183SW
GATE SWITCH 2184SW
2171
2172
2173
2174
2175
2176
2179
T11
218
2181
2182
2183
2184
2185
2186
2189
T21
I/1.6
2181PB
C
2191
2192
219
2142
JUMPER
2193
T22
JUMPER
2194
T12
V
O/1
220
I/1.5
221
222
223
2231FU
9AMP
2221
216SR
13
14
2231L1
2231VFD
L1
L2
2231L2
216SR
23
24
2232
2232FU
9AMP
224
2241
1 (STOP)
11 (+24VDC)
225
O/0
2 (FORWARD)
226
I/4
R1
2142
R2
T1
T2
T3
GND
2231T1
2231T2
2231T3
223 MTR
TABLE DRIVE MOTOR 1/2 HP
227
2271POT
3
2
1
12
13
14
16
228
229
2291FU
4AMP
2292FU
4AMP
PARAMETERS
P036 = 2
P038 = 2
P039 = 0.1
P040 = 0.1
230
2311TEMP
231
2301
2111CR
2222
ZONE 1
OFF ON
2311SS
2311
1
2
2312
2111CR
2302
ZONE 1 TEMP CONTROL (INNER)
232
2321
9(+) W
3(+)
2323
2321SSR
2321TC
2322
8(-) R
4(-)
2324
233
I/5
5
2142
6
234
HEATERS ON
2321SSR
2339
ZONE 1 HEATER
2339-1
ZONE 1 HEATERS
235
236
237
238
239
240

W101-101
101-119-2950

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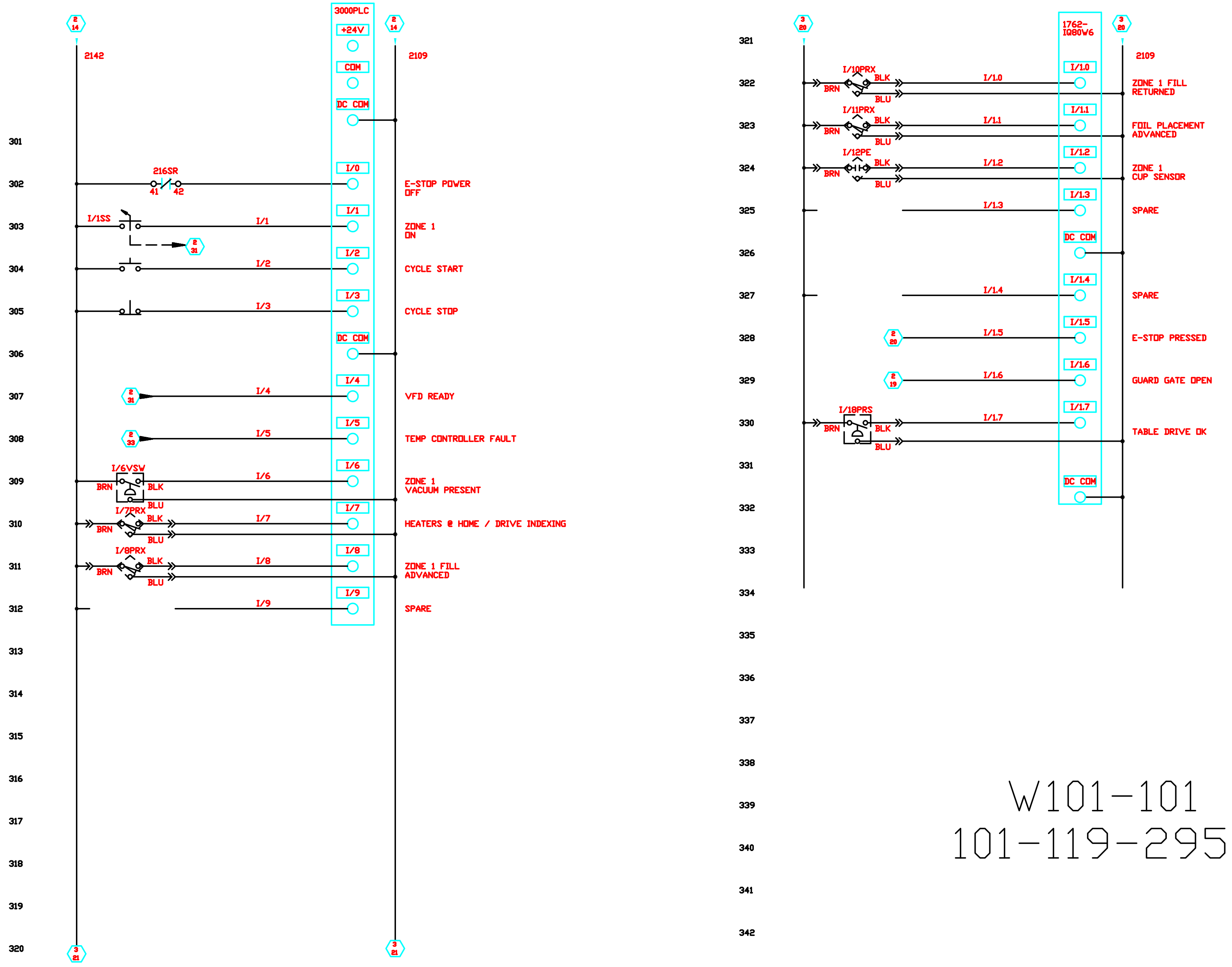

3000PLC
+24V
COM
DC COM
I/0
I/1
I/2
I/3
DC COM
I/4
I/5
I/6
I/7
I/8
I/9
2142
2109
2 14
3 21
216SR
41
42
I/1SS
2 31
2 31
2 33
I/6VSW
BRN
BLK
BLU
I/7PRX
BRN
BLK
BLU
I/8PRX
BRN
BLK
BLU
I/1
I/2
I/3
I/4
I/5
I/6
I/7
I/8
I/9
E-STOP POWER OFF
ZONE 1 ON
CYCLE START
CYCLE STOP
VFD READY
TEMP CONTROLLER FAULT
ZONE 1 VACUUM PRESENT
HEATERS @ HOME / DRIVE INDEXING
ZONE 1 FILL ADVANCED
SPARE
301
302
303
304
305
306
307
308
309
310
311
312
313
314
315
316
317
318
319
320
1762-IQ80W6
I/1.0
I/1.1
I/1.2
I/1.3
DC COM
I/1.4
I/1.5
I/1.6
I/1.7
DC COM
3 20
2109
I/10PRX
BRN
BLK
BLU
I/11PRX
BRN
BLK
BLU
I/12PE
BRN
BLK
BLU
2 20
2 19
I/18PRS
BRN
BLK
BLU
I/1.0
I/1.1
I/1.2
I/1.3
I/1.4
I/1.5
I/1.6
I/1.7
ZONE 1 FILL RETURNED
FOIL PLACEMENT ADVANCED
ZONE 1 CUP SENSOR
SPARE
SPARE
E-STOP PRESSED
GUARD GATE OPEN
TABLE DRIVE OK
321
322
323
324
325
326
327
328
329
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331
332
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101-119-2950

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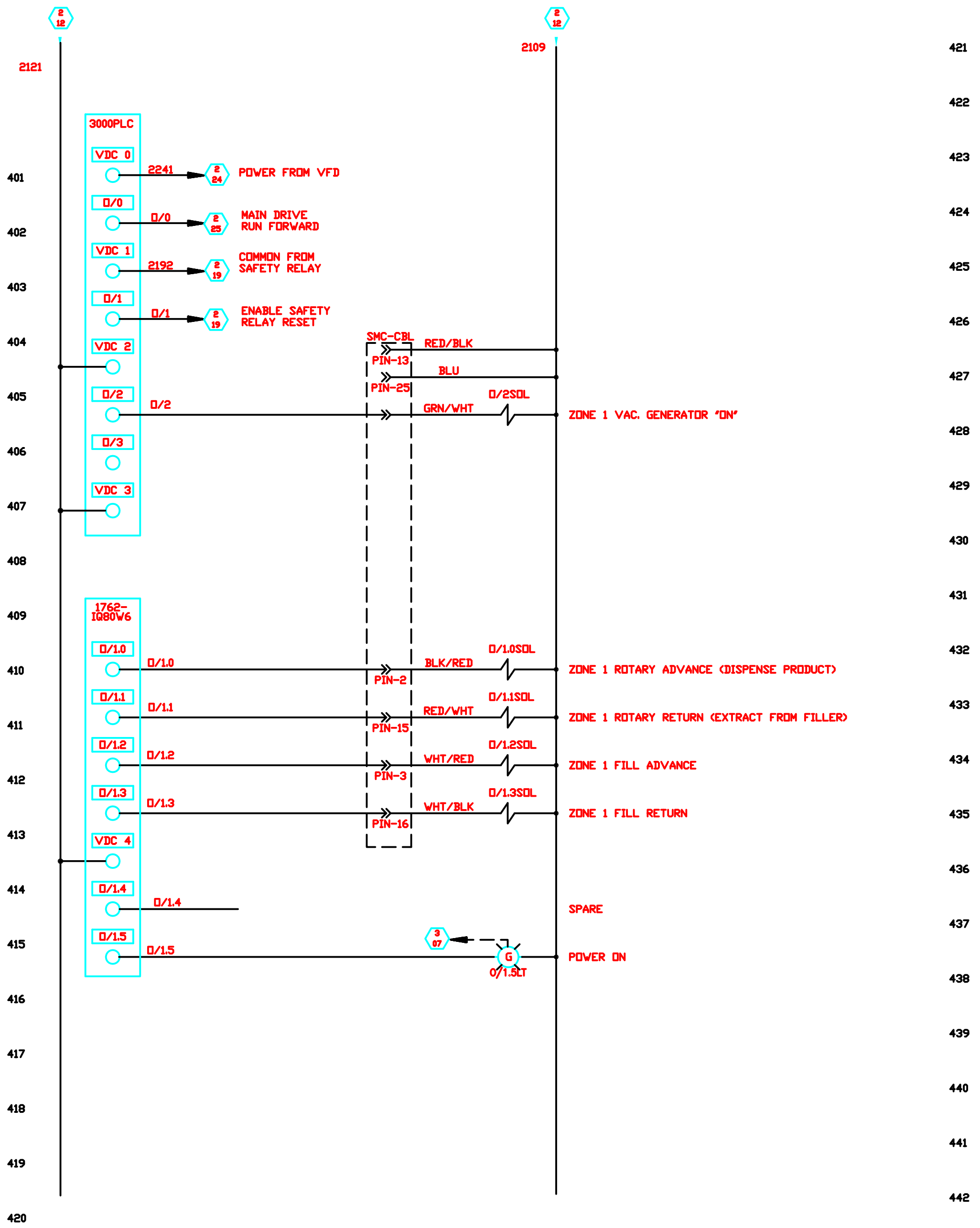
2
12
2121
2
12
2109
3000PLC
VDC 0
2241
2
24
POWER FROM VFD
O/0
O/0
2
25
MAIN DRIVE
RUN FORWARD
VDC 1
2192
2
19
COMMON FROM
SAFETY RELAY
O/1
O/1
2
19
ENABLE SAFETY
RELAY RESET
VDC 2
O/2
O/2
O/3
VDC 3
SMC-CBL
PIN-13
RED/BLK
PIN-25
BLU
GRN/WHT
O/2SOL
ZONE 1 VAC. GENERATOR "ON"
1762-
IQ80W6
O/1.0
O/1.0
PIN-2
BLK/RED
O/1.0SOL
ZONE 1 ROTARY ADVANCE (DISPENSE PRODUCT)
O/1.1
O/1.1
PIN-15
RED/WHT
O/1.1SOL
ZONE 1 ROTARY RETURN (EXTRACT FROM FILLER)
O/1.2
O/1.2
PIN-3
WHT/RED
O/1.2SOL
ZONE 1 FILL ADVANCE
O/1.3
O/1.3
PIN-16
WHT/BLK
O/1.3SOL
ZONE 1 FILL RETURN
VDC 4
O/1.4
O/1.4
SPARE
O/1.5
O/1.5
3
07
G
O/1.5LT
POWER ON
401
402
403
404
405
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408
409
410
411
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413
414
415
416
417
418
419
420
421
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W101-101
101-119-2950

WILPACK PACKAGING
DATE: DRAWN BY:
DESCRIPTION:
JOB #: PAGE: 4

Apendix B

Camco Indexer Manual.

CAMCO®

The Driving Force in Automation

GENERAL SERVICE MANUAL
INDEX DRIVES

ISO 9001 REGISTERED

“WARNING”

This is a controlled document. It is your responsibility to deliver this information to the end user of the CAMCO indexer.
Failure to deliver this, could result in your liability for injury to the user or damage to the machine.
For copies of this manual call your Customer Service Representative 800/645-5207.

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INTRODUCTION

CAMCO Index Drives are engineered and manufactured to very high tolerances which necessitate careful inspection and maintenance. This manual will act as a general guide to lubrication, trouble shooting and general information about index drives.

In addition to this General Service Manual CAMCO has other service manuals devoted to the specific model CAMCO index drive you are using. The specific model service manuals deal with disassembly and assembly of the major components. It also contains an exploded view of your index and a complete bill of materials for ordering spare or replacement parts or identifying parts.

Some users of indexing drives have the facilities and trained personnel to accomplish service repair. You must determine the extent to which intricate servicing should be done in your own facility. When in doubt, CAMCO recommends that CAMCO trained servicemen make the repairs.

HOW TO USE YOUR SERVICE MANUAL

1. Check the Table of Contents located in the front of the book. Page numbers are listed across from the subject.

2. This manual deals with general service and maintenance subjects. In addition to this manual you should have the specific model service manual. You may request a copy from your local CAMCO Sales Representative. If you do not know who your local representative is you can request a copy directly from the CAMCO by calling (847) 459-5200. Ask for Customer Service.

3. The Model Number Interpretation section will assist you in identifying the model you have and the characteristics of that drive

4. The Trouble Shooting Guide will help you diagnose common problems you might experience.

5. This manual will explain how to order parts or return an Index Drive to CAMCO for repair. **IMPORTANT:** The Bill of Materials listed in the specific model service manual is for a standard unit. If you feel you have a special unit, or are in doubt, please use the procdeures outlines in the “How to Order Parts” section.

6. Read all cautions and warnings prior to service or repair.

7. Read warranty prior to service or repair.

WARRANTY

Our products are warranted for one (1) year from the date of shipment to be free from defects in workmanship and materials

The foregoing warranty is exclusive and in lieu of all other warranties, whether written or orally expressed or implied and there are no warranties of merchantability or fitness for particular use.

Our obligation under the foregoing is limited to replace free of charge, including the lowest transportation cost, but not including installation or any other charges, any part that our inspection shows to be defective provided that the part was properly installed, suitably maintained and not subject to misuse or abuse, and further provided that the defective parts are returned to our plant within one (1) year after delivery by us. Written permission for such return must first be obtained from CAMCO. A complete explanation is required of the alleged defects and circumstances.

See the "How to Return for Repair" section of this manual.

WARNINGS AND CAUTIONS

Statements in this manual proceeded by the words warning or caution and printed in ***italics*** are very important. We recommend you take special notice of these during service or repair.

WARNING
Means there is the possibility of personal injury to yourself or others.

CAUTION
Means there is the possibility of damage to the CAMCO unit.

INTERPRETATION OF INDEX DRIVE MODEL NUMBERS

In an effort to better understand the type of Index Drive you have purchased, the complete model number as it appears on the name tag can be divided into five (5) main components.

EXAMPLE: 250P4H20-270

250	P	4	H20-	270
(1)	(2)	(3)	(4)	(5)

1. The basic CAMCO model series, usually the diameter of the cam follower circle *(i.e. 250 means 2.5" diameter).*

2. The type of cam and output configuration
    P = Parallel cam unit
    RA = Right angle cam unit
    RAD = Right angle cam / dial mounting output
    RD = Roller gear cam / dial mounting output
    RG = Roller gear cam unit
    RDM = Roller gear cam / dial mounting output / motorized
    E = Heavy duty right angle cam units / dial mounting

3. The number of stops.

    Four (4) stops means the output shaft will make four starts and stops during one complete 360 degree revolution. The angle of each segment of output rotation is derived by dividing 360 by the number of stops.

    EXAMPLE: 4 stops = 90 degree segments *(4 total)*

4. Cam follower size.

    The follower size is listed in 32nds of an inch.
    Example: 1: H20 = 20/32nds = .625 inch diameter followers
    Example: 2: H96 = 96/32nds = 3.00 inch diameter followers

5. Cam motion in degrees.

The cam is divided into two basic parts, motion and dwell. Motion is the angular segment in which the cam does its work rotating the output shaft one complete stop.

After motion is complete the cam is considered to be in dwell for the reminder of the 360 degree rotation.

Dwell means there is no motion taking place at the output of the Index Drive even though the input shaft continues to rotate.

Example: 270 degree motion means that during 270 degrees of input rotation the output shaft makes one index. During the remaining 90 degrees of input rotation the output does not move.

IMPORTANT NOTE: Some CAMCO units are called "type 2" units. In this case the cam has two motion periods and two dwell periods on the cam.

Example: 250P6H20-270 Type 2 *(also shown as Type II).*

For 135 degrees on input rotation the output shaft makes one index. During the next 45 degrees of input rotation the output does not move. For the next 135 degrees of input rotation the output makes a second index. During the next 45 degrees of input rotation the output does not move. In summary, two complete cycles of index and dwell are provided for one rotation of the input shaft. Therefore, 50RPM at the input (cam) shaft equals 100 indexes/minute.

CAMCO'S MOST POPULAR INDEX DRIVE MODELS

(250P, 387P, 512P, 662P, 900P, 1200P, 1800P) - (400RA, 401RA, 512RA, 662RA, 663RAD, 900RAD, 1200RAD) - (350RG, 500RG, 700RG) - (425RD, 800RD, 1301RD, 1801RD, 601RDM, 902RDM, 1305RDM) (E2000, E3000, E4000, E6100)

This list is not complete but more representative of the model likely encounter for a typical application.

INDEX DRIVE SERVICE DATA

1. The Index Drive oil level should be checked monthly and oil added as required to maintain proper level.
2. The oil should be changed as outlined in the lubrication section.
3. All grease fittings should be lubricated with the recommended grease once per month.
4. All index drive mounting bolts should be checked for tightness after three months of service and annually thereafter.
5. Cam followers should be inspected every 8000 hours of operation as outlined in its related section.

INDEX DRIVE LUBRICATION DATA

OIL LEVEL

CAMCO Index Drives are furnished with a "bulls-eye" type oil level sight gauge. The oil level should be checked when the unit is stopped at which time the oil level should reach the center of the sightglass (see page 3 for estimated oil capacity). During oil changes this "bulls-eye" can be removed for cleaning.

CAUTION: *CAMCO units are shipped without oil. Be sure to fill prior to initial startup.*

OIL CHANGE

An oil change is required every 2000 hours of operation, or every six months whichever occurs first. Where operating conditions are severe, such as rapid rise and fall in temperature of the indexer housing (which is accompanied by sweating of the inside walls with a resulting formation of sludge), where operation is in moist and dusty atmospheres, or in the presence of chemical fumes, it may be necessary to change the oil in intervals of one to three months.

> NOTE: The magnetic drain plug should be visually inspected at this time for metallic chips that might indicate failure of one of the internal components.

TYPE OF OIL - For a copy of interchangeable industrial lubricants please call:

Lubricating oils should be high quality, well refined petroleum oils or synthethic lubricants with extreme pressure additives. They may be subjected to high operating temperatures, so the y must have good resistance to oxidation. These oils should meet the American Gear Manufactures Association (AGMA) standards, AGMA 4EP or AGMA 5 EP.

Change the oil every 2000 hours of operation, or every six months whichever occurs first.

The following is a list of CAMCO approved lubricants for use in CAMCO Index Drives.

MOBILGEAR 630 *(Mobil Oil)*
OMALA 220 *(Shell Oil)*
SERVO INDEXER *(SHC 634)*

> NOTE: When the gear reducer and Index Drive have common oil as in the case of the 902RDM Index Drive with the R250 reducer, an AGMA #8 compound is recommended.
> One such lubricant is Mobil's 600 W SUPER CYLINDER OIL.
> * If you cannot locate the oil listed your supplier should be able to cross reference to another brand.

For SCI *(Servo-controlled Indexing)* Indexers, use MOBIL SHC 634.

> NOTE: For lubricants used in Gear Reducers not sharing common oil with Index Drives see the GEAR REDUCER SERVICE SECTION.

GREASE PACKED BEARINGS

Bearings that are accessed by oil in the indexer reservoir require no additional maintenance. Bearings not lubricated by the oil in this way are normally packed with a high quality bearing grease. However, bearings that are not lubricated by the oil reservoir or by grease packing will require periodic greasing. Bearings of this type will be furnished with a grease fitting and should be greased with NGLI #3 bearing grease at least once per month. Do not overlube since the excess grease will eventually fall into the indexer oil reservoir.

INSPECTION OF CAM FOLLOWERS

The Cam followers should be inspected every 8000 hours of operation. Backlash at any station indicates worn or damaged cam followers. Any binding on rotation of the input shaft is an indication of broken cam followers.

To inspect for excessive backlash, place the indexer in a dwell position and check for looseness by physically trying to force the dial or crank arm back and forth. If excessive looseness is found (.0015 at 6" radius) this indicates that replacement of the cam followers is required and the Index Drive should be returned to CAMCO for repair.

Contact your nearest CAMCO representative for assistance if necessary.

INDEX DRIVE OIL CAPACITIES - EST. OIL CAP.

(NORMAL MOUNTING POSITION)*

MODEL NO.	U.S.	Metric	MODEL NO.	U.S. ON LINE	Metric
------	Quart	(liter)	150RPP	2 1/2 Qt.	(2.4)
250P	3/4 Qt.	(.7)	300RPP	4 Qt.	(3.8)
387P	2 Qt.	(1.9)	500RPP	10 Qt.	(9.5)
512P	5 Qt.	(4.7)	900RPP	48 Qt.	(45)
662P	10 Qt.	(9.5)	950E	CF	(CF)
900P	20 Qt.	(19)	1150E	CF	(CF)
1200P	48 Qt.	(48.6)	1550E	CF	(CF)
1800P	95 Qt.	(90.3)	2050E	45 Gal	(166 L)
350RG	1 1/2 Qt.	(1.4)	2750E	75 Gal	277 L)
500RG	5 Qt.	(4.7)	700RG	10 Qt.	(9.5)
425RD	2 Qt.	(1.9)	800RD	5 Qt.	(4.7)
1301RD	14 Qt.	(13.2)	601RDM	2 Qt.	(1.9)
*902RDM	3 Qt.	(2.8)	1305RDM	9 Qt.	(8.5)
400RA(B)	1 Qt.	(.9)	1800RDM	36 Qt.	(34.2)
512RA(CC)	2 Qt.	(1.9)	401RA(C)	1 1/2 Qt.	(1.4)
663RAD(DR)	4 Qt.	(3.8)	662RA(CCM)	6 Qt.	(5.7)
			900RAD(GH)	6 Qt.	(5.7)

CF: CONSULT FACTORY

*Normal mounting is output vertical on all models except the "Parallel series" in which normal mounting is output horizontal, even with input.

OIL SEAL INSTALLATION RECOMMENDATIONS

We recommend that all seals be replaced anytime the device is being disassembled regardless if they are damaged or not. Most damage to oil seals occurs at assembly when recommended seal installation procedures are not followed.

1. Check dimensions -- to be sure that shaft and bore diameters match those specified for the seal selected.

2. Check seal -- for damage that may have occurred prior to installation. A sealing lip that is turned back, cut or otherwise damaged should be replaced.

3. Check bore -- to see that the leading edge is deburred. A rounded corner of chamfer should be provided.

4. Check shaft -- remove surface nicks, burrs and grooves and look for sprial machine marks that can damage the seal lip.

5. Check shaft end -- remove burrs or sharp edges. The shaft end should be chamfered.

6. Check splines and keyways -- smooth any sharp edges and when necessary protect the seal lip with an assembly sleeve or shim stock. Round the edges of the spline or keyway as much as possible and lubricate with a hard, fibrous grease.

7. Check seal direction -- make sure that the new seal faces in the same direction as the original. Generally, the lip faces the lubricant or fluid to be sealed.

8. Prelubricate the sealing element -- before installation by wiping with lubricant being retained.

9. Use the correct installation tool -- press fitting tools should have outside diameter .010" smaller than the bore size. If possible, center of tool should be relieved so that pressure is applied only at the O.D.

10. Use proper driving force -- where possible, an arbor press; otherwise, a dead blow hammer to avoid popping the spring out of the seal. NEVER HAMMER DIRECTLY ON THE SURFACE OF THE SEAL.

11. Bottom out the tool or seal -- to avoid cocking of the seal in the bore. This also positions the seal correctly on the shaft.

12. Check for parts interference -- from other machine parts that might rub against the seal causing friction and damaging heat.

GEAR REDUCER SERVICE DATA

CAMCO Index Drives use three (3) basic makes of reducers. These are Cone Drive, Morse and CAMCO. The service data list below is intended to cover all three in a general manner. It is recommended that you refer to the lubrication bulletin pertaining to your particular model. *(You may request a lubrication bulletin from our Customer Service department, Wheeling, Illinois (847) 459-5200).*

1. The reducer oil level should be checked monthly and the recommended oil added as required to maintain the proper oil level.

2. The oil should be changed as outlined in the lubrication section.

3. All grease fittings should be lubricated with the recommended grease once per month.

4. The reducer , particularly finned areas and fan covers should be kept clean to allow maximum heat dissipation. (Excessive accumulation of dirt and grease will effect proper cooling of the unit).

5. All reducer and foundation bolts should be checked for tightness after three months of service and annually therafter.

6. A change in sound level or excessive vibration can indicate low oil level, abnormal loading or worn elements.

7. During operation, a worn gear may run hot. However, unless the temperature exceeds 200 degrees F. *(93 degrees C)* there is no cause for alarm.

GEAR REDUCER LUBRICATION DATA

OIL LEVEL

Most reducers are furnished with a "bulls eye" type sightglass or a pipe plug to indicate oil level. In either case an oil level tag is affixed to the reducer near the oil level indicator. Oil level should be checked with the unit stopped. Estimated oil capacities for standard reducers are listed on page 13.

CAUTION: *CAMCO ships all gear reducers without oil (except the 180SM, R225 and R260). Be sure to fill to proper level prior to startup.*

OIL CHANGE - WORM GEAR REDUCER LUBRICATION

Lubricating oils used for gear redducers should be high quality, well refined petroleum or synthetic lubricants. These oils should meet the American Gear Manufactures Association (AGMA) standards, AGMA 7C & AGMA 8C. One such lubricating oil is Mobil's Mobil 600W Super Cylinder Oil.

Change the oil every 2000 hours of operation, or every six months whichever occurs first.

NOTE: Failure to comply with oil change intervals may void warranty.

TYPE OF OIL

Lubricating oils used for gear reducers should be high quality well refined petroleum oils. These oils should meet the American Gear Manufacturers Association (AGMA) standards #7C & #8C. Morse ED Series reducers use Mobil SHC 634 wormgear lubricant. See the lubrication bulletin provided with your particular reducer or request one from CAMCO.

*For SCI *(Servo Controlled Indexing)* Reducers use
AMOCO'S -- Synthogear EP220
EXXON'S -- Spartan Synthetic EP220
MOBIL'S -- SHC 634 or Mobilgear SCH 220.

VISCOSITY

Oils recommended for AGMA #7C & #8C compound must have a minimum viscosity index of 90 (see attached chart - page 9).

GREASE PACKED BEARINGS

Bearings that are at least partially submerged in oil or oiled by internal oil scoops do not require special maintenance. However, bearings that are not lubricated as above require grease lubrication. Grease fittings and internal retainers are furnished as required. They should be greased with NGLI #3 bearing grease at normal maintenance intervals.

OIL CAPACITY

MODEL	CAPACITY (liter)		MODEL	CAPACITY	
Morse 13ED	7 0z.	(.2)	Morse 18GSF	12 oz.	(.4)
Morse 15ED	7.5 oz.	(.2)	Morse 20GSF	24 oz.	(.7)
Morse 18ED	12 oz.	(.4)	Morse 25GSF	1 1/4 qt.	(1.2)
Morse 20ED	14 oz.	(.4)	Morse 30GSF	2 qt.	(1.9)
Morse 25ED	1 qt.	(.9)	Morse 35GSF	3 qt.	(2.8)
Morse 40GSF	3 1/2 qt.	(3.3)			
7200C	1 qt.	(.9)	Morse 50GSF	1 3/4 gal.	(6.6)
7250C	1 qt.	(.9)	Morse 60GSF	3 3/4 gal.	(10.4)
7300C	1 1/2 qt.	(1.4)			
7350C	3 1/2 qt.	(3.3)	CAMCO 180SM	1 qt.	(.9)
7400C	1 gal.	(3.8)			
7500C	1 3/4 gal.	(6.6)	CAMCO R200	1 qt.	(.9)
7600C	2 3/4 gal.	(10.4)	CAMCO R250	1 1/2 qt.	(1.4)

NOTE: The above capacities are maximum. The capacity may vary depending upon the mounting position.

RECOMMENDED LUBRICANTS FOR DOUBLE ENVELOPING WORM GEAR UNITS

BRAND NAME	VISCOSITY INDEX	MANUFACTURER
Cyl. Oil #680	90	AMOCO OIL CO.
600 Cyl. Oil	103	CATO OIL & GREASE CO.
Cyl. Oil 680-7	90	CITIES SERVICE CO.
ENLUBOL SCO-3400	90	ENGINEERED LUBRICANTS
CYLESSTIC TK-680	97	EXXON CO., USA
SENATE 460	101	GULF OIL CO., USA
Cyl. Oil #680	95	ILLINOIS OIL PRODUCTS
CYLESSO TK-680	90	IMPERIAL OIL LTD.
KENDCO 155 COMP.	100	KENDALL REFINING CO.
KEYGEAR 610	100	KEYSTONE OIL
600W SUPER Cyl. Oil	95	MOBIL OIL CO.
SHC-634 SYNTHETIC	145	MOBIL OIL CO.
Cyl. Oil #6	96	PENNZOIL CO.
HECTOR 630S	95	PHILLIPS PETROLEUM CO.
VALVATA J-680	90	SHELL OIL CO.
HONOR Cyl. Oil 680	97	TEXACO

OVERLOAD CLUTCH

GENERAL

The CAMCO *(plunger type)* overload clutch is a reliable minimum service overload device requiring very little attention *(in a semi-clean environment)* during its service life. The environment is an important factor in the successful functioning of this device. A dusty or corrosive environment may require special preparation or attention. *(Contact CAMCO for special modifications).* High humidity, contaminants, or wash down applications may also require special protection. If rust forms within the clutch, it may act as a solid coupling and will not release under overload conditions, *(See lubrication procedures).*

NOTE: For complete installation, operation and maintenance instructions, including component identification drawing, contact CAMCO.

LUBRICATION

Under normal conditions the overload clutch will not require lubrication on a scheduled basis but the overload clutch should be tested at least once every 6 months to be sure it is functioning properly. To do this the output member *(sprocket, dial, pulley, shaft etc.)* should be locked by mechanical means, then attempt to hand crank the reducer input shaft *(or input shaft of the index drive if not reducer is used).* By locking the output member the clutch should trip during index of the drive. If the clutch does not function you could break a follower or cam during normal operation. Therefore, the clutch should be taken apart, *(as outlined in the "Clutch Installation, Operation and Maintenance Instruction Manual") (Note all warnings and cautions)* cleaned and apply a light coat of Mobil grease 77 to the drive plate and mating surface of the clutch body. Also, lubricate the spring pockets with a light film of grease.

CAUTION: *Heavy lubrication in the spring pockets may lock the plunger, due to hydraulic pressure, preventing the clutch from disengagement. In dusty, corrosive, high humidity, contaminants or wash down environments, lubrication (as outlined above) should take place at least once every six (6) months or sooner if required.*

LONG TERM REDUCER/INDEXER STORAGE

1. Standard Shipping Procedure - Protection for Maximum Storage Duration of 30 Days.

Most Indexers are run-in tested using a rust inhibiting oil, drained, painted with one coat of CAMCO metallic Blue, and all exposed shafting coated with a rust preventative prior to shipment. This procedure is intended to protect the Indexers during shipment and short term inside storage for a maximum period of thirty (30) days after shipment.

2. Long Term Storage (Indoors) for Periods up to One Year.

(a) Fill the Indexers completely full with one of the lubricants shown on our indexer list of lubricants.
(b) Rotate the reducer worm shaft until you have completed one revolution of the output. Rotate a least once per month to keep the seals from sticking to the wear rings and or shafts.
(c) If it is not practical to rotate the input shafts periodically we recommend purchasing a set of oil seals to have on hand in the event of seal leakage at start-up.
(d) Before putting the Indexers into service, lower the oil in the Indexers to the proper operating oil level.

3. Long Term Storage (Outdoors) for Periods up to One Year.

Proceed as in (2) above with the following additions.
(a) After filling the unit with oil, plug the breather hole with a pipe plug and wire the breather hole the unit.
(b) Coat all exposed shafting with long term rust preventative.

4. Extended Storage periods Exceeding One Year.

(a) Coat all exposed shafts with a long term rust preventative.
(b) Place the unit in a heavy plastic bag and put approximately 1/2 oz. #260 "VPI" powder in the bag. Seal the bag air tight.
(c) Crate the unit and cover the crate to keep out water.
(d) Purchase a spare set of oil seals to have on hand at start-up.

TROUBLE SHOOTING GUIDE

CAMCO's warranty service costs are exceedingly low (.1% or less). Most service calls turn out to be something other than the indexer. This is why we discuss input and output connections in such detail. See recommended input and output sections.

The following is a compilation of common problems and possible solutions which CAMCO has experienced with its Index Drives.

CAMCO recommends that technicians experienced in index drives make repair. A full year warranty is given on any unit rebuilt by CAMCO.

If the customer must rebuild the unit himself, he should refer to the individual service manual that applies to his model index drive. He should follow step by step procedures for disassembly and assembly as described in these manuals as well as cautions and warnings. NOTE: CAMCO will not Warranty any units rebuilt by the customer.

SYMPTOM: CUSTOMER CLAIMS INDEXER IS INACCURATE

1. Check if unit stops in dwell. See our assembly drawings for keyway position in dwell. Also, refer to cycle cam and limit switch function in this manual.

2. Is the output shaft backlash-free in dwell? Be sure to disconnect all other devices from the indexer output including a CAMCO overload clutch. All indexer must be backlash-free in dwell (see Symptom: Looseness in Dwell).

3. How is the unit being checked? We use a computer controlled checking machine which checks each index against the theoretically perfect index. Call the factory for assistance. We keep in spection reports for Special Accuracy units (units which are required to be within closer toler ances than standard).

SYMPTOM: LOOSENESS IN ONE DWELL

1. Followers are worn and need replaicing.

2. Follower wheel is damaged and needs rework or replacement.

SYMPTOM: LOOSENESS IN EACH DWELL

1. Camshaft is loose in bearings. Check for end play in input shaft. Adjust shims on bearing caps. See individual service manual for preload setting procedures.

2. Cam is loose on shaft. Usually repaired at factory.

3. Cam is broken. (This happens very seldom and is an indication of an overload application or a jam-up).

4. Unit was very heavily overloaded and all bearings loosened up. Rework required.

5. All followers are worn. Rebuilding by factory is best remedy.

6. Output shaft to follower wheel connection is loose. Factory is recommended.

7. Customer output member connection loose. Tighten output member and dowel in place.

SYMPTOM: INDEXER IS NOISY

1. Check if output is backlash-free in dwell.

2. Check for excess looseness in motion. Cam or follower could be broken

3. Is indexer noisy or could it be the reducer?

4. Very often variable speed D.C. controls cause the input to pulsate and create noise. Adjust the Internal Resistance Compensation within control.

5. Are input and output connections backlash free?

6. Is the unit overloaded? Loads can change over a period of time due to wear.

7. Is the unit support (base) rigid?

8. The unit could be overheated and have loose preload.

9. Is unit with oil? Is oil used consistent with CAMCO specifications? (See Index Driv

SYMPTOM: PREMATURE WEAR ON FOLLOWERS

1. Actual forces on the unit could be greater than calculated due to loose input or output.

2. Lack of oil or wrong oil used *(See Lubrication section of Index Drive Service).*

3. Frequent or severe overloads.

4. Improper input systems *(where there is not a constant velocity input)* will cause an erratic output or excessive output vibration. This will result in forces several times higher than calculated *(see input recommendations).*

5. Defective cam or follower wheel assembly.e Lubrication).

SYMPTOM: OUTPUT MOVEMENT IS ERRATIC AND VIBRATING

1. Input does not run at a constant velocity. The prime objective of a good input connection to an Index Drive is to maintain a constant shock free velocity *(see input recommendations).* Motor running too slow could also cause an erratic output.

2. Output connections loose flexing, or winding up. Check all connections *(see recommended output connections).*

3. Excessive friction drag on output. Disconnect indexer and investigate friction torque.

4. Unit is overloaded due to excessive speed or loads. Contact our Sales people and check data sheet application loads and speeds. Decrease speed.

5. Unit could be internally damaged. Check other symptoms.

6. Unit support is not ridgid. Check rigidity of index drive mount with an indicator. Stiffen support or decrease speed.

RECOMMENDED INPUT CONFIGURATION

The prime objective of a good input connection to an Index Drive is to maintain a constant shock-free velocity.

Both the type of motor driving the indexer and the type of connection is of equal importance. Here we explain some of the advantages and disadvantages of these factors.

1. **Wormgear** reducers with a high reduction provide two features. First, the flywheel energy due to the high speed of the input. Secondly, the low efficiency of a wormgear reduces the effects of backdriving and thus prevents input speed fluctuations.

2. **Timing belts** may be used if a wormgear drive is not suitable because of low gear reduction or shaft arrangement requirements. Timing belts are desirable due to zero backlash and if properly sized they have a long life. Timing belts also provide a flywheel effect of the pulleys and are service free. *(Note: Use tapered bushings in all pulleys and use a high service factor).* The pulleys selected should be as large as possible to maximize the flywheel effect, and minimize belt flexing.

3. **Zero backlash** couplings are suitable, especially with tapered bushings. During installation, special care is required to assure alignment of the couplings. When selecting a coupling a high service factor must be used. Brands available are Thomas Coupling, Rexnord, Zurn Industries, etc. Some customers have been successful with rigid couplings, but alignment of shaft becomes critical. Shaft failures are common in thses situations.

4. **Gears and chains** are not very desirable and should be used only if no other method is possible. Gears should be set to minimum backlash and maximized in size. Unless enclosed and oil lubri cated, only slow speeds are acceptable. Chains stretch and have backlash. A larger sprocket size helps and some customers have been successful with self-adjusting idler arrangements.

5. **Line shafting** - Torsional windup is just as undesirable as backlash.

CAUTION: *Long slender line shafts, rubber insert couplings, long belts and spongy mountings will drastically increase actual torque demand which in turn again raises torsional windup. Breakage or severe vibration can result.*

6. Permanent magnet motors fulfill two objectives, low cost and low inertia, but are at a disadvantage for flywheel energy. This is especially serious for large dial and reciprocating applications. CAMCO does not recommend operating permanent magnet motors below 1000RPM, and if loads are very heavy we would like to see 1500RPM or more. Failure to maintain these minimum speeds will result in erratic input speeds and unpredictable torque levels.

7. Air and hydraulic motors can cause considerable problems. The inherent low inertia of these motors and the resulting lack of adequate stored flywheel energy do not provide a reliable constant input velocity.

RECOMMENDED OUPUT CONFIGURATION

The objective of a good output connection to an Index Drive is to make torque levels predictable and limited in magnitude. A good connection is free of backlash and rigid.

CAMCO recommends that a CAMCO output overload clutch be used with index drives whenever possible. This will prevent costly damage to the unit in the event of a jam-up and eliminate costly down time.

Our preference for output connections is as follows and in this order:

1. Flange mountings are superior. A properly bolted and dowelled connection will provide a good connection for dials, sprockets, gears and overload clutches. CAMCO provides output flanges on most CAMCO indexers for this reason.

2. Zero backlash couplings are suitable, especially with tapered bushing. During installation, special care is required to assure alignment of the coupling. When selecting a coupling a high service factor must be used. Brands available are Thomas Coupling, Rexnord, Zurn Industries, etc. Some customers have been successful with rigid couplings, but alignment of shaft becomes critical. Shaft failures are common in these situations.

3. Timing belt drives if sized properly are an excellent drive. Unfortunately, proper sized means large and thus can seldom be used on higher speed applications. The timing belt drive tends to use up a significant amount of available index drive capacity.

4. Gears and chains are not very desirable and should be used only if no other method is possible. Gears should be set to minimum backlash and maximized in size. Unless enclosed and oil lubricated, only slow speeds are acceptable. Chains stretch and have backlash. Again, a larger sprocket size helps and some customers have been successful with self-adjusting idler arrangements.

CAUTION: *Torsional windup in line shafting is just as undesirable as backlash. Long slender line shafts, rubber insert couplings, long belts and spongy mountings will drastically increase actual torque demand which in turn again torsional windup. Breakage or severe vibration may result.*

5. For the calculations on any Indexer or Oscillator drive application to be of any value, both the input and output connections must be "stiff" and free of backlash. This is as important as the sizing of the Index Drive itself.

HOW TO ORDER PARTS

Please refer to Parts List applicable to your specific model as shown in the specific model service manual. This Parts List is for a standard Index Drive. If you feel your drive in nonstandard or you are in doubt you should contact CAMCO Customer Service (847) 459-5200 and request a bill of material for your specific unit (based on serial number).

You may order parts by using the Standard Bill of Material even if your unit is nonstandard CAMCO's order entry people will review the closed order file based on the following information and supply you with the correct part.

REQUIRED INFORMATION:

1. Original purchase order number (if available)
2. Customer name (original purchaser of drive)
3. Model number (located on name plate)
4. Serial number (located on name plate)
5. Approximate date of purchase

CAM & LIMIT SWITCH FUNCTIONS

THIS OPTION SERVES TWO PURPOSES:

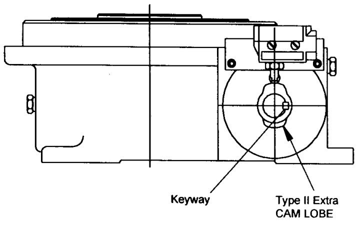
1. Some customers desire an electrical signal somewhere during dwell in order to trigger another device such as a cyclinder, punch press, loader, etc.
2. To signal the dwell position for a cycle on demand application. In cycling, the input is signaled tostop somewhere in dwell position. This stopping may be done either by stopping the motor or using a clutch brake to disconnect the motor from indexer input. Either, these methods allow operation of the Index Drive near its rated capacity *(shortest motion time)* and, by controlling the time the indexer stops, give the customer his desired dwell time.

CAUTION: *There are several ways to misapply the limit switch. One of the most common problems is failure to stop the unit in dwell. Starting and stopping in motion may overload the indexer and open up the overload clutch (if supplied).*

The dwell position can be found by checking the indexer output for movement by means of an indicator or by observing the appropriate notes in our CAMCO assembly drawings.

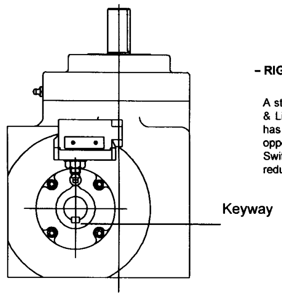
CORRECT KEYWAY POSITION
FOR CAM AND LIMIT SWITCH ASSEMBLIES

– ROLLER GEAR UNIT



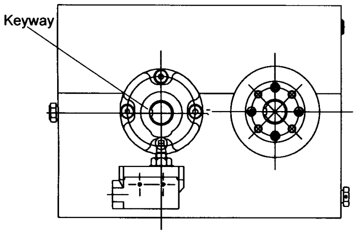
A standard Roller Gear unit with the CAM & Limit Switch mounted on the correct keyway position directly opposite of the output shaft, 90° (clockwise) from the CAM Lobe. The CAM & Limit Switch may also be mounted on the reducer. *If the unit has a "Type II" motion, a special Limit Switch CAM is needed with one extra Lobe, 180° from the first Lobe (as shown). ***Note: On some RDM units (such as the 601 RDM), the CAM & Limit Switch is mounted at an angle***.

– RIGHT ANGLE UNIT



A standard right angle unit with the CAM & Limit Switch mounted on the housing has a correct keyway position directly opposite of the CAM Lobe. CAM & Limit Switch may also be mounted on the reducer.

– PARALLEL UNIT



A standard parallel unit with the CAM & Limit Switch mounted on the housing has a correct keyway position directly opposite of the output shaft, 90° (clockwise) from the CAM Lobe. CAM & Limit Switch may also be mounted on the reducer.

Type 2 motions require double-lobe trip cams since one revolution of the input will produce 2 dwells. Type 2 units are typically used when a higher number of stops are required.Please remember that CAMCO cannot preset the trip cam. Every customer has different requirements which make standardization very difficult.

Another potential problem is double indexing. This can happen if limit switch does not close the contacts for a sufficient peroid necessary to energize the holding relay. Higher speed operation or an improperly adjusted limit switch may cause this problem.

TO ORDER PARTS contact CAMCO "ORDER ENTRY DEPARTMENT" Wheeling, Illinois
Phone (847) 459-5200 or Fax (847) 459-3064.

A. Describe the part required and the 14 digit part number as listed in the Standard Bill of Materials or a Special Bill of Materials pertaining to your specific unit *(state which bill is being used, Standard or Special bill).*

B. Give as much of the above required information as possible.

ON WARRANTY

CAMCO will send replacement part freight prepaid via the most practical means. CAMCO will issue a "Returned Material Authorization Number" (RMA#) for the return defective parts for inspection. CAMCO will bill the customer for repair parts. When inspection of the returned parts has been completed and determined to be a warranty problem CAMCO will issue credit to the customer for the repair parts and freight charges.

ON NON-WARRANTY

Replacement or spare parts, with approved credit, are sent F.O.B.our plant Wheeling, Illinois.

HOW TO RETURN FOR REPAIR

Please contact Customer Service Department in Wheeling, Illinois at (847) 459-5200 for a "Return Material Authorization" Number (RMA#).

The following information is required of a unit for repair, conversion or warranty.

1. Purchase order number
2. Customer name
3. Customer billing address
4. Customer shipping address
5. Person to contact, upon inspection, with delivery and price.
6. Telephone number
7. Model number *(located on name plate)*
8. Serial number *(located on name plate)*
9. Description of defects, problems or circumstances.

CAMCO "Customer Service Department" will assess repairs by phone and estimate inspection fees or repair costs.

Non-warranty inspection fees will vary depending on the size of the unit and optional equipment mounted. These fees apply only if customer decides not to repair or replace subject unit.

Please return CAMCO equipment only (remove sprockets, pulleys, etc). This will reduce the amount of disassembly time (saving customer cost on labor) and will provide faster evaluation for quoting price and delivery of repair or conversion.

Package unit to protect it from weather or damage during shipping. Place the (RAM#) on the outside of the packaging for prompt service.

Ship Warranty units via surface freight collect.
Ship Non-Warranty units to CAMCO transportation prepaid. CAMCO will not accept collect shipments on non-warranty repairs

Ship to: (CAMCO) Commercial Cam Co., Inc.
1444 South Wolf Road
Wheeling, Illinois 60090 - USA
Tel: 847-459-5200
Fax: 847-459-3064
Toll Free: 800-645-5207
E-MAIL: mktg@camcoindex.com
Internet: http://www.thomasregister.com/camco

INDEXER WEIGHTS

EFFECTIVE: 4/12/96
SUPERSEDES: 3/29/96

Model	Right Angle Weight-Lbs.	(Kg)
301RA	15	(6.8)
400RA	33	(15.0)
401RA	55	(24.9)
512RA	80	(36.3)
662RA	160	(72.6)
663RA	130	(59.0)
900RA	220	(99.8)
1200RA	850	(385.6)

Model	Roller Gear Weight-Lbs.	(Kg)
350RG	35	(15.9)
500RG	350	(158.8)
600RG	390	(176.9)
700RG	400	(181.4)
601RDM	70	(31.8)
902RDM	130	(59.0)
1305RDM	305	(138.3)
1800RDM	1400	(635.0)
425RD	110	(49.9)
800RD	450	(204.1)
1301RD	1000	(453.6)
1801RD	2400	(1088.6)

Model	Parallel Weight-Lbs.	(Kg)
250P	18	(8.2)
387P	55	(24.9)
512P	135	(61.2)
662P	430	(195.0)
900P	750	(340.2)
1200P	1100	(499.0)
1800P	3000	(1360.8)
513PDO	700	(317.5)

Model	Heavy Duty Weight-Lbs	(Kg)
E-2000	5000	(2268.0)
E-3000	5500	(2494.8)
E-4000	6000	(2721.6)
E-6100	18000	(8164.7)
E-8000	54000	(24494.2)

Model	Cambots Weights-Lbs	(Kg)
150RPP	45	(20.4)
300RPP	110	(49.9)
500RPP	300	(136.1)
900RPP	575	(260.8)
140LPP	55	(24.9)
240LPP	80	(36.3)
380LPP	200	(90.7)
4120LPP	340	(154.2)

Model	Mini Rollergear Weights-Lbs	(Kg)
32RG	2.8	(1.3)
40RG	6	(2.7)
50RG	18	(8.2)
70RG	25	(11.3)
80RG	65	(29.5)

Model	Torq Gard Clutches Weights-Lbs	(Kg)
TG3	1.5	(0.7)
TG6	2	(0.9)
TG20	3.2	(1.5)
TG60	6	(2.7)
TG200	12	(5.4)
TG400	43	(19.5)
TG800	43	(19.5)

Model	Overload Clutches Weights-Lbs	(Kg)
0.39	5	(2.3)
2.3	10	(4.5)
4	17	(7.7)
6	25	(11.3)
7.8	20	(9.1)
11	40	(18.1)
18	75	(34.0)
35	57	(25.9)
31	123	(55.8)

Model	MISCELLANEOUS Weights-Lbs	(Kg)
180SM	10	(4.5)
R225	25	(11.3)
R260	25	(11.3)
7300C	89	(40.4)
7350C	123	(55.8)
7400C	180	(81.6)

Model	MISCELLANEOUS Weights-Lbs	(Kg)
7500C	307	(139.3)
7600C	433	(196.4)
7700C	625	(283.5)
7800C	755	(342.5)
71000C	1625	(737.1)
Kebco	7	(3.2)

Note: Weights shown are shipping weights without oil.

TORQUE VALUES FOR LOCKNUTS

TIGHTENING TORQUE FOR CAM FOLLOWER LOCKNUTS.

Follower	**Thread Size**	**Torque - Ft**	**Lbs. (Nm)**
7/16 (H14)	#10-32	1.2	(1.5 Nm)
1/2 (H16)	1/4-28	3	(4)
5/8 (H20)	5/16-24	7.5	(10)
3/4 (H24)	7/16-20	20	(27)
7/8 (H28)	7/16-20	20	(27)
1 (H32)	5/8-18	50	(68)
1 1/8 (H36)	5/8-18	50	(68)
1 1/4 (H40)	3/4-16	80	(108)
1 1/2 (H48)	7/8-14	100	(135)
1 3/4 (H56)	1-14	150	(200)
2 (H64)	1 1/8-12	200	(270)
2 1/2 (H80)	1 1/4-12	250	(340)
3 (H96)	1 1/2-12	400	(540)
3 1/2 (H112)	1 3/4-12	650	(880)
4 (H128)	2-12	1100	(1490)

Note: Torque values are for non-lubricated nuts, coated only with a residual film of oil, as received from the manufacturer.

RECOMMENDED TIGHTENING TORQUE VALUES FOR CAPSCREWS

Bolt Size (UNF or UNC)	**Into Aluminum **Torque Ft/Lb (NM)**		**Into Steel **Torque Ft/Lb (Nm)**	
1/4	5	(7 Nm)	7	(9 Nm)
5/16	9	(12)	!4	(19)
3/8	16	(22)	25	(34)
7/16	26	(35)	40	(54)
1/2	42	(57)	65	(88)
9/16	58	(79)	80	(108)
5/8	85	(115)	110	(150)
3/4	143	(194)	220	(298)
7/8	228	(310)	350	(475)
1	345	(468)	530	(720)
1 1/8	430	(583)	660	(895)
1 1/4	598	(810)	920	(1250)
1 1/2	1065	(1440)	1640	(2225)

Note: Torque values are for non-lubricated capscrews, coated only with a residual film of oil, as received from the manufacture and a thread locking solution applied to the threads. CAMCO recommends "Loctite Removable Threadlocker 242" be applied to all fasteners and tapped holes at assembly

The Driving Force In Automation

Commercial Cam Co., Inc. (CAMCO)
1444 South Wolf Rd.
Wheeling, IL 60090 U.S.A.

ISO 9001
REGISTERED

Phone: (847) 459-5200 Fax: (847) 459-3064
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Internet: http://www.camcoindex.com

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CAMCO U.K.
432 Perth Avenue
Slough Trading Estate
Slough Berkshire, England
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Warranty & Parts

Warranty

The Wilpack Machines are guaranteed on all machined parts by Wilpack against defects for a period of twelve months. All purchased components such as bearings, drive motor, gear box, etc. will be guaranteed to the customer as guaranteed to Wilpack. NOTE: If physical alterations or changes are made to the machine by anyone other than Wilpack, the warranty is immediately null and void unless written permission is given by Wilpack. This will insure our continuous high standards.

Our warranty only extends to the original buyer and applies only to equipment that is installed in accordance to Wilpack recommendations. This warranty does not apply where Wilpack determines that any claimed defect arose from any misuse, neglect, improper installation, alteration, or because regular maintenance is not followed.

Wilpack will not be responsible for system performance unless the containers and lids have been tested and approved by Wilpack in compatibility with the Wilpack packaging machine system.

Wilpack will not be liable for any loss of profit (due to lack of personnel experience or knowledge), loss by reason of plant shutdown, non-operation or increased expense of operation, loss of product or materials, or other special or consequential loss or damage of any nature, and all claims for such loss or damage are expressly waived by Wilpack.

Parts

For replacement parts please contact:

Wilpack Packaging
815-490-9235
Sales@wilpackpackaging.com

Notes:

Notes:

WINPAK